TEACHER TEXT

Higher Secondary Course

COMPUTER APPLICATIONS

(COMMERCE)

CLASS - XII

Government of Kerala
DEPARTMENT OF EDUCATION

State Council of Educational Research and Training (SCERT), Kerala
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Teacher Text Development Team

Members

Joy John
HSST, St. Joseph's HSS,
Thiruvananthapuram.

Sai Prakash S.
HSST, St. Mary's HSS,
Vettucadu, Trivandrum.

Prasanth P. M.
HSST, St. Joseph's Boys' HSS,
Calicut - 1.

A. S. Ismail
HSST, PJMS GHSS,
Kandassankadavu, Thrissur.

Raja Mohan C.
HSST, Nava Mukunda HSS,
Thirunavaya, Malappuram

Musthafa Shamsul Huq
HSST, GHSS Kuthuparamba,
Kannur

Asees
HSST, Govt. HSS Velliyode,
Kozhikode

Sunil Kariyadan
HSST, Govt. Brennen HSS,
Thalassery

Veena.M
Freelance Environment Educationalist,
Thanal, Maruthoor, Vattappara.P.O,
Trivandrum.

Experts

Dr. Lajeesh
Head, Dept. of Computer Science, University of Calicut

Dr. Madhu S. Nair
Assistant Professor, Dept. of Computer Science, University of Kerala

Dr. Binu P.Chacko
Associate Professor, Dept. of Computer Science, Prajyothi Nikethan College, Thrissur

Dr. L. C. Deepa
Assistant Professor, Dept. of English, Govt. Women's College, Trivandrum

Academic Coordinator

Dr. Meena S.
Research Officer, SCERT

Prepared by :

State Council of Educational Research and Training (SCERT)
Poojappura, Thiruvananthapuram 695012, Kerala
Website : www.scertkerala.gov.in *e-mail* : scertkerala@gmail.com
Phone : 0471 - 2341883, Fax : 0471 - 2341869
Typesetting and Layout : SCERT

FOREWORD

Dear teachers,

The **Teacher Text for Class XII Computer Applications** (Commerce) is intended to serve as a transactional aid to facilitate classroom transaction and as a ready reference for teachers. The textbook on Computer Applications is developed as per the approaches and methods suggested by the ***Kerala School Curriculum 2013***. As the curriculum is activity-based, process-oriented and rooted in constructivism, focusing on the realization of learning outcomes, it demands higher level proficiency and dedication from the part of the teachers for effective transaction.

The Teacher Text offers some guidelines for the transaction of the concepts highlighted in the Textbook. It helps a teacher to engage in the teaching-learning process by providing sample transactional strategies. Those strategies are only suggestive and not prescriptive. Teachers can refer to them and apply their skill and creativity to design and implement effective strategies depending on the level of learners. It is to be ensured that the learners achieve significant learning outcomes at each level, as envisaged in the curriculum. The Teacher Text also contains an exclusive section for the guidelines to the lab work and practical examination and sample question papers.

The Textbook and Teacher Text on Computer Applications are prepared by a team of practising teachers under the guidance of a panel of subject experts. All possible efforts have been taken to make the books learner-friendly and interesting. There is no denying the fact that our teachers are resourceful and committed, and hence directions towards the right path can make the transaction of the curriculum most effective and productive.

Creative criticism and suggestions for improvement of the book are most welcome.

Dr. S.Raveendran Nair
Director
SCERT, Kerala

Contents

About Teacher Text...

The teacher text is a resource to teachers that helps daily planning, provides instructions adequate to carry out the activities in the textbook, persuades the teacher to seek for more information and provides the additional information needed for the teacher. The relevance of the teacher text is that the teacher must be provided with deeper insight of the activities in the textbook, additional activities, evaluation models and communication techniques. Hence the following are included in the teacher text.

Teacher text is organised in two parts. Part I narrates the approach of higher secondary curriculum revised in accordance with the Kerala School Curriculum 2013. This part cconsists of the General Approach, Assessment Approach, Subject Approach, Syllabus, Learning Outcomes and Scheme of Work of the subject. Part II is composed of the unit analysis of all chapters in the text book. Unit analysis of a chapter gives the comprehensive vision about the chapter. Part III includes guidelines for lab work, and practical evaluation with a pool of question. This section also contains two sample question papers for Term-end Evaluation. Unit analysis of a chapter consists of the following:

Introduction

An introduction is provided for each unit. The main concepts aimed in the lesson, process skills to be developed among students, the values and attitudes to be inculcated and the social significance of the topic are indicated in the introduction. It is a window to each lesson.

Unit Frame

Each unit frame is a precise and comprehensive presentation of concepts dealt with in the chapter and the transactional strategies to attain the learning outcomes. A unit frame has 3 coloums. The first coloum includes details regarding the concepts the learner should know, the process skills to be developed etc. for achieving the results of study. The second coloum indicates the teaching-learning

activities. The last coloum includes the learning outcomes that the student must achieve. The approximate time needed for each unit is mentioned. Teachers have the freedom to design and plan suitable strategies for the transaction of the concepts. But care should be given to ensure that the activities are learner centered, process oriented, constructivist and able to attain process skills and learning outcomes.

Towards the Unit

This section details the activities specified in the unit frame. The involvement of teacher and learners are mentioned in the description of the activities. The activities detailed are only suggestions. According to the competency level of the learners and the facilities in the school, teacher can frame suitable transactional strategies. Extended activities may be given to promote the scholars to achieve higher level process skills and conceptual depth.

Assessment

It needs no emphasis to state the importance of evaluation for effectively conducting learning activities. Assessment indicators of important activities and products that ought to be subjected to evaluation in each module are provided in the teacher text. This does not mean that they are only to be evaluated. The teacher has to prepare his/her own worksheets for continuous evaluation, self-evaluatory devices and mutual evaluatory devices. Some models are given in the teacher text.

At the end of each unit, a set of sample questions and scoring indicators are given to prepare for term-end evaluation.

Part I

General Approach

Introduction

The National Curriculum Framework 2005 sowed the seeds for many reforms in the field of education in India. Subsequently, NCERT prepared textbooks for various subjects based on NCF 2005. Later the, Kerala Curriculum Framework 2007 was formed and the curriculum upto high school level was revised. The Right to Education Act of 2009, Prof. P.O.J.Labba Committee Report related to Higher Secondary Education and Dr. P.K.Abdul Aziz Committee Report related to a comprehensive curriculum revision - all pointed towards the necessity of curriculum reform.

In the 1990s, a new curriculum with comprehensive changes in learning and pedagogy was introduced at the primary level. Based on this activity-based, process-oriented and learner-centred curriculum, Continuous and Comprehensive Evaluation (CCE) and grading system were implemented. Subsequently, this method was introduced at the Higher Secondary level too.

Significance of Curriculum Revision

Though activity-based pedagogy has already been introduced at the higher secondary level, a comprehensive revision of curriculum has not been implemented yet. The ongoing syllabus revision interacts with contemporary events and takes into consideration the nature of

The curriculum, syllabus and textbooks being followed for more than five years should be revised and reformed urgently by SCERT.

Prof.P.O.J.Labba Committee

As a knowledge society, it is of paramount importance to basically restructure and reform the curriculum to face the challenges posed by the times.

Dr. P.K.Abdul Aziz Committee

the learner. As a stepping stone to the higher education sector, the higher secondary curriculum should be raised to international standards. International standards do not refer to the standard of education set by any particular country. On the other hand, it must inculcate in the learner the ability to take his life forward wherever he is, after the completion of his higher secondary education. It is the sum-total of all the experiences and knowledge to be picked up by the learner for meeting the needs. This emphasizes the need to provide internationally accepted teaching-learning models to our students. The curriculum revision has been envisaged as an attempt in that direction.

RIGHT TO EDUCATION ACT - 2009
Section - 29 (Chapter 5)
Curriculum and evaluation procedure

(1) The curriculum and the evaluation procedure for elementary education shall be laid down by an academic authority to be specified by the appropriate Government, by notification.

(2) The academic authority, while laying down the curriculum and the evaluation procedure under sub-section (1), shall take into consideration the following, namely:

(a) conformity with the values enshrined in the Constitution;
(b) all round development of the child;
(c) building up child's knowledge, potentiality and talent;
(d) development of physical and mental abilities to the fullest extent;
(e) learning through activities, discovery and exploration in a child-friendly and child-centred manner;
(f) medium of instruction shall, as far as practicable, be in child's mother tongue;
(g) making the child free of fear, trauma and anxiety and helping the child to express views freely;
(h) comprehensive and continuous evaluation of child's understanding of knowledge and his or her ability to apply the same.

The curriculum should be revised ensuring the above-mentioned factors, and the revision of the curriculum has to be viewed against this backdrop.

Kerala School Curriculum (2013) - Chief characteristics

The curriculum

- is learner-centred, process-oriented, activity- based and value oriented.
- gives stress to the learning outcomes that a learner imbibes at the cognitive, social and emotional levels.
- lays stress on the skills to be attained by the learner in values and attitude.
- is based on the philosophy of constructivism.
- gives teachers freedom to choose and employ logical and varied learning strategies for the transaction of curriculum.
- is flexible to implement various teaching - learning strategies recognizing the learning outcomes, nature of the content and the different levels of the learners. Discovery learning, Concept attainment model, Inductive method, Meta cognition, Co-operative learning, Collaborative learning, Reflective learning, and giving opportunities to individuals and group learning etc. are taken into consideration.
- is comprehensive and takes into consideration the various stages from the pre-primary level to the higher secondary level.
- designs innovative learning strategies as well as assessment activities for children with special educational needs.
- ensures a Continuous and Comprehensive Evaluation (CCE) focused on learning outcomes.
- stresses Health and Physical Education, Art Education and Work Education.
- lays stress on Right-based Education in the light of Right to Education Act, 2009.
- provides an opportunity to the learner to experience necessary safety, care and security both at school and in the classroom by raising the teacher to the level of a mentor.
- lays stress on the Code of Professional Ethics for school teachers.
- helps to acquire new learning skills which enable the learner to face contemporary challenges.

- is intended to inculcate human values in the learners.
- ensures equity and equality among the learners.
- ensures the harmony of head, heart and hand and aims at a comprehensive development envisioned to make learning natural.

Curriculum Approach

Our curriculum has been developed, imbibing new thoughts in educational psychology and philosophy. The idea of constructivism put forth by NCF 2005 is the basis for the Kerala School Curriculum 2013 too. In constructivism, learning is the process of the construction of knowledge.

The striking features of the curriculum transaction approach are:

i. Activity - based
ii. Process- related
iii. Ensure learning
iv. Focus to attain learning outcomes
v. Environment- friendly
vi. Highlights development areas
vii. Suitable for the nature of the learner
viii. Integrates learning and assessment

A learning process based on constructivism is the foundation of the curriculum. A distinguishing feature of this approach is that knowledge is constructed naturally by creating challenging learning activities and considering the acquired knowledge and conceptual background of the learner.

Learning Experiences

The acquired knowledge skills and interests differ from learners coming from different backgrounds. So it is very important to facilitate learning experiences imbibing these changes and considering individual differences and multiple intelligences of the learners.

Learning Environment

The classroom should be designed to keeping in mind the interest and development of the learner so as to ensure his/her participation in various learning activities. Every activity should be learner-oriented. A conducive environment should be created. The freedom to employ suitable learning strategies which are learner-centred and activity-based, taking into consideration the development and growth in the learning ambience rests with the teacher.

Learning Process

- Each learner constructs knowledge by linking it with his/her previous experiences.
- Knowledge construction occurs at the level of the individual through meaningful societal interventions.
- Learning is made effective through multi-sensory experiences which consider various learning styles, learning pace etc.
- Learning becomes more effective through co-operative learning in an environment conducive for co-operation.
- Learning materials should be meaningful generating interest in the learner.
- Spiralling of learning experiences will make learning more effective.
- By ensuring flexibility of learning activities and possibilities of adaptation, learners requiring special educational needs and with different aptitudes may be attended to.
- Each learner should get learning experiences necessary to ensure learning outcomes.
- Learning and Assessment should be complementary.
- Everybody can attain learning outcomes by adopting suitable teaching- learning strategies that consider content and learning requirements of the learner.
- The learning process should be decided keeping in view the comprehensive development of each learner.

Learning Outcomes

As per the rules of the RTE Act, the idea of learning outcomes was introduced in the Kerala School Curriculum 2013. Knowledge of learning outcomes is essential to plan the teaching-learning process and evaluation, in a precise and practical manner. Learning outcomes are the aims to be achieved by the learner during the various stages of school education. Precise and accurate statements based on the knowledge, skills, attitudes, values etc. to be acquired by a learner in a particular subject-area are called Learning Outcomes.

The learning outcomes should be stated based on performance that can be observed and measured. An analysis of the learning outcomes will help assess the knowledge, skills, values and attitudes that should be acquired by the learner at the end of each unit, class and stage have been acquired or not. Precise and clear assessment activities can be planned, based on specific learning outcomes.

Information and Communication Technology

Today information and communication technology has an important role in the construction and dissemination of knowledge. This is made possible through gathering of information, analysis and varied presentations. The immense possibilities of ICT can be used to transact any subject at the higher secondary level. Through this, it can also be ensured that learners acquire ICT skills. The main features of ICT are stated below.

Art Education

Arts evolved as a part of providing enjoyable experiences in the progress of man as a social animal.

The experiences gathered during various phases of life touch human minds aesthetically. All the art forms that evolved from ancient times were visual and auditory. It had the power of rejuvenating the human mind. This is the unique characteristic of art.

Art education at the higher secondary level aims to develop the creative skills acquired by the learner and to create in him a broader outlook about art and literature. Also an aptitude for higher studies

and research in the field of arts has to be developed in them. In order to develop observation skill, ability to appreciate and sense of imitation among learners, art education is essential. It also helps learners to develop abilities to think and respond differently, to ensure social intervention and to make learning more productive. Activities in art help to make children work hard and diligently, and also channelize their enthusiasm in the right direction.

Health - Physical Education

The term health refers to the complete state of physical, mental, emotional and spiritual well-being. Therefore health is essential for the existence of an individual. So proper implementation of health and physical education is essential. The minimum physical fitness required for every individual in the society in order to exist should be ensured. For this, health and physical education should be imparted scientifically and comprehensively from a very early age. The views of National Curriculum Framework 2005 regarding need based and integrated approach should be given special attention and emphasis.

Along with the knowledge of content areas, performance excellence and physical fitness are also to be assessed. The health-physical education envisioned in Kerala School Curriculum 2013 and initiated at the primary level, gets perfected at the higher secondary level only. Learning activities should be planned so as to enable learners excel in this field to explore up to the level of international possibilities. The physical fitness, training excellence and knowledge of content areas acquired hitherto promote holistic well-being.

Objectives of Health - Physical Education

- To get an awareness about sports, values and ethics.
- To gain expertise in athletic skills and to scientifically analyse them.
- To gain expertise in major games.
- To get practical training in self defence techniques.
- To understand aggression, balanced or controlled aggression etc.
- To realise the consequences of the use of drugs.

- To create the right understanding about sexual health.
- To acquire scientific practical ability to intervene effectively during life rescue missions.
- To get an awareness about the changes in the respiratory and cardio-vascular system that can be brought through exercise.
- To give training using safe and effective exercise pattern.

Work Education

The confluence of knowledge acquired through hearing, sight and work makes construction of knowledge possible in a learner. Contemporary learning process evolves through enquiry and experiences. Work education is essential to integrate and develop emotional and cognitive domains.

A work education integrated with the subjects of higher secondary curriculum, will be more appropriate.

Objectives of Work Education

- Readiness to work
- Development of values and attitudes
- Development of a balanced personality
- Self-sufficiency in the field of production
- Human skill development
- National development

Inclusive Education

In the classroom, an atmosphere that is congenial to all learners without excluding any one must be created. In our schools there are two categories of students, one who requires more consideration, help and attention and the other who requires normal help and attention. Only by addressing this can we ensure equitable quality education.

Areas which help to develop values, attitudes and commitments

Areas such as awareness of humanitarian and constitutional values, attitudes that strengthen social life and growing social commitment are the prime concerns of the curriculum. Details of the conceptual areas are given below.

Democratic Outlook

While choosing the content for different subjects, the perspectives on democracy have to be considered. In the planning and transaction of learning activities, there should be a democratic approach. The aim of the curriculum is to establish a democratic approach through democratic platforms.

Constitutional Values

The values and objectives that are upheld by our Constitution have to be reflected in the curriculum. The content and the transaction process should be selected to enable learners acquire constitutional values.

Secular Attitude

Subject areas which help in developing a secular attitude have to be included.

Tolerance

The curriculum should aim at developing the quality of tolerance towards those who disagree with you.

Constructive and Creative Thinking

There is a need to develop creative thinking and the urge for discovery among learners. There should be possibilities for creative enquiry in the content areas and learning strategies of the curriculum. The different levels of multiple intelligences should also be considered.

Respect for one's cultural heritage

Respectful attitude to one's cultural heritage and history is one of the aims envisioned by the curriculum.

Equality

It is essential to ensure equality in learning activities, which are provided to the learners.

Leadership Quality

There is need to design learning strategies that would help in shaping leaders who are capable of facing the challenges of this millennium. In the classroom, opportunities must be created to develop leadership qualities among children.

Life Skill Education

Life skills such as self awareness, empathy, communication skill, interpersonal relationship, creative thinking, critical thinking, decision-making, problem-solving, coping with emotions and coping with stress should be developed in learners. These life skills help the learner to face life with self-confidence.

Civic Sense

Just as the state has certain duties to the citizens, the citizens also have some duties to the state. The aim of education is to create a community with civic sense and a sense of responsibility and discipline.

Respect for Elders

Respect for elders is the keystone of our civilization. In all cultures, old people are venerated and given due consideration. An important characteristic of the elder people is that they are a store house of experiences. Our cultural life being continuous and heritage-oriented, the age-old experiences and knowledge are handed down from one generation to another. Factors which encourage learners to express respect for elders through co-operative interventions should be made part of the transaction of content.

Human Rights

Human rights are the rights of individuals to lead a life of dignity. The human rights which got universal acceptance through the United Nations Declaration of Human Rights should be given importance in the curriculum.

Child Rights

It is our duty to protect every right of the child.

Awareness about Environment

Basic awareness about nature and the need to protect natural resources should be included from the primary level itself. Children should be made to understand that environmental hygiene is as important as personal hygiene and that sense of hygiene is one of the basic factors of civic sense. They should understand that nature and natural resources are not meant just for the consumption of

human beings and that any change in the balance of nature will have far- reaching consequences. They should carry out activities which make protection of natural resources and environmental hygiene a value-system and an attitude.

Water Literacy

Children must be made to understand that water is precious by creating awareness about the availability of water, conservation of water and the need to keep it free from pollution.

Peace Education

The basic idea of peace education is to develop values and attitudes to interact with others and the surroundings in a peaceful and friendly manner. It is essential to include content areas that reflect values like avoiding conflicts and situations leading to conflicts, peace and harmony.

Legal Literacy

Knowledge and awareness about law is essential for all citizens of a democratic country. It is the need of the hour to include content areas that ensure legal literacy. Various programmes involving Law Clubs, Law Clinics etc. can be organized to create awareness of law.

Cyber Literacy

The misuse of ICT and related crimes are on the rise. Awareness should be created among children on these activities. They should be given a clear idea about the proper use of Internet, e-mail and social networking sites. The curriculum should facilitate creating awareness among children regarding the punishment for cyber crimes and the ethics in the use of internet etc.

Media Literacy

Media exerts a great influence on our society. It is impossible even to imagine a day without visual media. Visual media has tremendous influence on children. Therefore, the content area of the curriculum should contain various factors required to create critical media literacy.

Perspective on Sustainable Development

The curriculum should spread the awareness that this earth exists

not just for the benefit of mankind. An understanding regarding the environmental challenges, human interventions which cause harm to environment, and how nature can be protected from such destructive activities etc. is the need of the hour. The curriculum should also uphold the enquiry how environment and development can go hand in hand and perspectives regarding sustainable development and views. One of the aims of the curriculum is to present perspectives on consistent development and create a comprehensive awareness about environment.

Adolescent Education

The possibility of including content areas on adolescent education should be explored with the help of child psychologists, health workers, doctors and teachers. It is also important to address the doubts of learners regarding health and hygiene in a scientific manner.

Consumer Culture

Facts concerning the negative aspects of consumerism have to be included in the curriculum. Consumer laws and our rights as consumers should delt with in the curriculum.

Anti-drug and intoxicant attitude

We should realise the harmful effect of alcohol, drugs, tobacco and other narcotics on the health of children. The future generation should be saved from the evil tentacles of this menace. Pictures, pamphlets and visuals on the physical and mental effects of drug abuse, as examples, can be included in the content areas.

Gender Justice

The curriculum should ensure gender justice and gender equality. Discrimination on the basis of gender should not be reflected in the content areas. It is the responsibility of teachers to ensure gender justice while carrying out learning activities.

Frugality

Children should be taught the basic lessons of frugality at the primary level itself. Explain the importance and relevance of the habit of frugality. Students can also be given practical training in frugality.

Road Safety

Traffic rules and practical suggestions to avoid road accidents are part of road safety. Children should develop the civic awareness that the road is a public place and that everybody has the right to use it. Activities related to road safety should also be given importance.

Learning experiences in these areas should be incorporated naturally in the transaction of the curriculum. While choosing the concepts of various subjects and arranging learning activities, enough consideration should be given. Knowledge, skill and attitude should be stressed in the process of teaching learning process. It should also be possible to perform continuous evaluation to find out whether the objectives have been accomplished. Activities of various clubs, SPC, NCC, Scouts and Guides, JRC, Vidya Rangam, Kalasahithya Vedi, Gandhi Darshan etc., can be platforms to develop values, attitudes and commitment.

Right Based Education

UNESCO had taken initiatives to decide on the rights of children and spread them world wide. As a result of this, legislation has been made in many countries to protect the rights of children. The Right to Education Act passed in 2009 in India, is an important milestone in this matter. The responsibility of protecting the rights of children becomes the duty of adults. Right to Education can be divided into three areas.

- Participation
- Provision
- Protection

Participation

- My opinion is sought when decisions concerning me / children are taken.
- My interests are given priority when decisions are taken.
- I am given the opportunity to participate in activities which are compatible with my ability and limitations.
- I am able to go through a learning process which is flexible enough to nurture my abilities and overcome my limitations.

- My opinions are given due respect and value.
- My friends and I get active participation in the activities in class.
- I get opportunities to display my talent and abilities.

Provision

- I get the service of teachers who have the required qualification and who constantly update their knowledge.
- I get learning -experience in the prescribed time.
- I get a classroom ambience conducive to physical and psychological growth.
- My teachers are able to make learning materials required for learning activities available.
- I get materials and opportunities for the growth of art and physical education.
- I also get career guidance for securing employment in future.

Protection

- I do not experience any kind of discrimination in or out of school.
- I am not ignored by any one in any manner.
- I am not harassed either physically or mentally.
- I can interact with my teachers without any fear.
- Though I am a child, every one respects and values my privacy.
- I am convinced that I will be safe both at home and at school.
- My school lends me a helping hand to further strengthen and empower me when I face physical and emotional problems.

If these are the rights of children, how far can I ensure these rights? What steps should I take further to ensure these rights? Every teacher should think about this.

Mentoring

RTE considers the teacher as a 'mentor'. Mentoring has much relevance and significance in the comprehensive school development project.

The teacher - student relationship has undergone significant changes. A teacher should function not as a person who distributes / dispenses

knowledge, but as a facilitator who co-ordinates the various opportunities of students to gain knowledge.

In reality, school is a second home for the child and teachers are the members of his/her family. A teacher should understand that all children do not receive love, consideration, security, appreciation and recognition etc., equally at home. The responsibility of a teacher becomes complete only when he/she realises this and is able to express these feelings accordingly to each child. Only then will a school become a home.

Only when a teacher becomes a mentor and a facilitator who helps gain learning outcomes, he/she will be a teacher of the new era.

When the teacher becomes a co-guardian, children get guidance, advice, support and opportunity to improve. The teacher as mentor should make interventions in the role of an experienced predecessor. Assistance for awareness and counselling are part of this. An effective mentor can bring out the hidden talents of a child.

Through mentoring:

- the teacher and the student enjoy proper learning experiences.
- the knowledge-area of the child and the teacher widens.
- the bond between the student and the school is strengthened.
- personality development and learning development of the child are ensured.
- collective thinking, decision- making and collective effort are made possible.
- the relationship between parents and school is strengthened and an overall view of the learner's learning process is created.
- the participation of the learner in arts and sports can be assessed.

Mentoring has to be manifested as a process which caters to personality development and interest in learning. It should also help in continuous assessment. Notes related to mentoring experiences should be recorded in the Cumulative Record. All the teachers in the school should act as mentors of students. All learners should get an experience of mentoring. The class may be divided into small groups and different teachers can be given the responsibility of evaluating the progress of each group.

Code of Professional Ethics for School Teachers

1. Responsibility towards Students

The teacher;

1.1 Treats all students with love and affection.

1.2 Respects the value of being just and impartial to all students irrespective of their caste, creed, religion, sex, economic status, disability, language and place of birth.

1.3 Facilitates students' physical, social, intellectual, emotional, and moral development.

1.4 Respects basic human dignity of the child in all aspects of school life.

1.5 Makes planned and systematic efforts to facilitate the child to actualise his/her potential and talent.

1.6 Transacts the curriculum in conformity with the values enshrined in the Constitution of India.

1.7 Adapts his/her teaching to the individual needs of students.

1.8 Maintains the confidentiality of the information concerning students and dispenses such information only to those who are legitimately entitled to it.

1.9 A teacher refrains from subjecting any child to trauma, fear, anxiety, physical punishment, sexual abuse and emotional and mental harassment.

1.10. Protects a child from all forms of sexual abuse.

2. Obligations towards parents, community and society

A teacher;

2.1 Establishes a relationship of trust with parents/guardians in the interest of the all round development of students.

2.2 Desists from doing anything which is derogatory to the respect of the child or his/her parents /guardians.

2.3 Strives to develop respect for the composite culture of India among students.

2.4 Keeps the country top most in mind, refrains from taking part in such activities as spreading feelings of hatred or enmity among different communities, religious or linguistic groups.

3. Obligations towards the profession of teaching and towards colleagues:

A teacher:

3.1 Strives for continuous professional development.

3.2 Creates a culture that encourages purposeful collaboration and dialogue among colleagues and stake holders.

3.3 Takes pride in the teaching profession and treats other members of the profession with respect and dignity

3.4 Refrains from engaging himself/herself in private tuition or private teaching activity.

3.5 Refrains from accepting any gift, or favour that might impair or appear to influence professional decisions or actions.

3.6 Refrains from making unsubstantiated allegations against colleagues or higher authorities.

3.7 Avoids making derogatory comments about colleagues, especially in the presence of pupils, parents or colleagues.

3.8 Respects the professional standing and opinions of his/her colleagues

3.9 A teacher maintains confidentiality of information regarding colleagues and dispenses such information only when authorized to do so.

Teacher Planner

Teacher planner is a record of daily teaching planning. The teacher should develop the process page by carrying out the activities given in the teacher text and text book with the aim of achieving learning outcomes. However, these activities should be done in a flexible manner, adopting techniques suitable for the students of her class.

The process page should contain planning that includes assessment along with learning activities. Information obtained through continuous assessment should also be included on the feedback page.

A teacher planner should contain learning activities conducive for precise and meaningful concept- formation. The teacher should prepare a reflection note based on the information gathered through learning activities and assessment implemented in a week. It should be discussed in SRG / Subject Council. Further planning notes should be made by the teacher based on these notes.

The format of a teacher planner is given below.

Teacher Planner	
Name of the unit/ lesson	:
Date	:
Expected time	:
Learning outcomes	:
Concepts / Ideas	:
Skills	:
Language elements (only for language)	:
Discourses (only for language)	:
Values, Attitudes	:
Learning aids	:
Expected Products	:

Process Page	**Assessment Page**
Process containing activities and assessment.	Assessment details should be included here.

Reflections

My findings, realisations

(Based on the ideas obtained through the assessment of learning activities)

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Extended Activities and Remedial Measures - Hints

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Assessment Approach

Learning is a natural and continuous process. For effective learning, learning experiences should be based on specific objectives and centred on learning outcomes. Teachers and learners should be aware of the concepts and skills to be acquired through learning. Learning strategies should be planned according to the learning outcomes associated with each lesson. They should be linked to real life situations and presented to the learners.

How far are the acquired concepts and skills sufficient in ensuring learning outcomes? How many learners are yet to acquire the learning outcomes? What are the extended activities to be provided? How can they be provided? These should be the concerns of teachers as part of assessment.

Assessment **of** Learning is the process of assessing the learning outcomes acquired after the transaction of a unit. The proficiency of the learner and his level of excellence are evaluated here. This is just one phase of assessment.

There is also a process of correction which involves a critical self analysis of the concepts and awareness gathered through learning and internalizing the changes. This can be considered as self-assessment. Thus, learning takes place through self-assessment. This can be called Assessment **as** Learning. The learner becomes aware of how to learn more effectively (Learning to Learn) through this.

Assessment for learning and assessment as learning should be intensely emphasised to make learning more effective. The approach which gives importance to assessment process for making learning more effective must be adopted.

Continuous and Comprehensive Evaluation (CCE)

Learning is a continuous process taking place in the learner. Hence, the assessment process to examine the concepts and skills acquired should also be continuous. By comprehensive assessment, we mean the assessment of the learner in cognitive as well as socio-emotional areas. Hence, we have adopted a continuous and comprehensive evaluation system.

CCE Areas

CCE is carried out in two areas;

1. Cognitive area
2. Socio - emotional area

Assessment regarding development in cognitive domain

The subjects taught at higher secondary level like Language, Science Humanities, Commerce, Health and Physical Education come under cognitive area. Learning outcomes acquired in each subject should be evaluated. Two types of evaluation are suggested here.

1. Continuous Evaluation (CE)
2. Term Evaluation (TE)

Continuous Evaluation (CE)

Three types of CE are suggested.

1. **Learning Process assessment**
2. **Portfolio Assessment**
3. **Unit based assessment**

1. Learning Process Assessment

Both the teacher and the learner plan various activities to acquire learning outcomes. The teacher has evaluated various factors like the participation of the learner in the learning process, excellence of the learner in performance and presentation, creativity of the learner, acquisition of desired skills etc. The indicators given below can be used for evaluation.

1. Participation in activity
2. Conceptual understanding
3. Acquisition of skills
4. Performance / Presentation
5. Recording / Preparation

When the process -assessment is carried out, the assessment done should be based on each indicator. For example, when evaluation for the indicator 'participation in activity' is done, the learners should be categorized as excellent, good, average and those who need improvement. This has to be recorded in the page for assessment in

Teacher Planner. All learners have to be assessed and recorded with reference to each indicator in every term.

Opportunity for self-assessment, peer assessment and teacher-assessment should be given in process-assessment.

Activity log

Activity log is an important document required for the assessment of the cognitive area. It helps to complete various activities according to learning processes. The creativity of the learner, thought processes, language skills, socio- emotional domain etc are reflected in the activity log. An activity log should contain details like the various strategies adopted for the transaction of lesson. The additional information given by teachers to strengthen the learning process too can be recorded in the activity log.

2. Portfolio Assessment

Portfolio is the collection of all products formed during the various stages of learning activities. It has the duty to give a learner, parents and the teacher feedback regarding learning.

The following should be included in a portfolio.

- Activity log
- Other learning documents, pictures, collections, writings, learning materials, creations made through ICT etc.
- Creative works
- Work sheets

The following indicators can be used for portfolio assessment.

- Clarity of concept
- Attainment of concepts
- Appropriate design
- Completion
- Originality

Method to calculate scores of learning process and portfolio

It is not necessary to record the score of all students calculated using indicators given for each activity. Performance of an entire term should be evaluated using the indicators. The notes in teacher planner, records in activity log etc should be consolidated at the

end of each term and learners should be categorised on the basis of their participation as Excellent, Good, Average, and Need improvement and 4/3/2/1 scores should be given accordingly. All five indicators have to be considered and score should be given for each indicator. The maximum score can be calculated as 20.

3. Unit based Assessment

In a unit, activities for various learning outcomes are distributed in an inter-related manner. This is comprehensive in nature. While assessing a unit, this comprehensiveness (considering all the learning outcomes) is assessed. Oral assessment, quiz programme, open book assessment, preparation of questions, identifying the indicators and assessment of creative writing can be considered for unit assessment. Rating scale and check list to measure the achievement of a learner in a particular unit can be used. Unit assessment should take place naturally along with learning.

For unit assessment, points have to be awarded on the basis of indicators and converted to grades. These grades have to be recorded in the prescribed format. As there is more than one assessment in a term, the average of the assessment of all the units has to be recorded at the end of the term. Teacher has to prepare indicators suitable for the tools used in assessment.

Open Book Assessment

An "open book assessment" is one in which examinees are allowed to consult their class notes, textbooks, and other approved materials while answering questions. It is ideally suited to programmes that especially aim at developing the skills of critical and creative thinking. The open material may take one of the main forms; a textbook or alternative reference materials, or the students' own notes. The types of material allowable must be made explicit to all students in advance of the assessment. Open-book assessments often comprise tasks based on a problem or argument to which the student is then required to respond, employing their knowledge of the subject and making use of the reference material as appropriate. Unit based assessment can be done in the form of open book assessment. It can be given after completing the unit, integrating all the learning outcomes. This assessment can be given for individual attempt first. Then the same can be allowed to be discussed in groups. Thus learning can be ensured in every learner.

Advantages of open-book Assessment

- They assess not only students' capacity to construct a coherent response to the assessment task, but also require a demonstration of their ability to use resource material effectively.
- By allowing students access to relevant reference material, open-book assessments reduce the need to memorise information, and can therefore allow students to concentrate on demonstrating their ability to understand and apply this information to the question.
- By providing students with reference material prior to the assessment, it may give them greater confidence when taking these assessments and therefore produce a more accurate account of their achievements.
- Students can use revision time more constructively, focusing on reinforcing their understanding of the subject rather than attempting to memorise information.
- Home assignments and other learning experiences already prepare the students to solve problems with the assistance of external resources, so open-book assessments are quite natural in nature.

Preparing for an Open Book Assessment

- Read the chapters ahead of time. Don't expect to find quick answers during the assessment.
- Know where to find everything. Observe the concepts and make your own outline. This reinforces the structure of the content in your mind.
- Mark all important terms with sticky notes and flags. If the teacher allows it, mark your texts wherever you notice important concepts and terms.
- Review notes for themes. Your teacher's comments usually provide an overview of the themes and concepts that appear on assessment. You won't always get this by reviewing the book alone.
- Make your own notes if allowed, and write down important formulas or concepts that you've covered in class.

Method of calculating CE

The maximum score for learning process, portfolio and unit based assessment will be 20 each in every subject. Term level recording can be done calculating the average of them. To consolidate these marks, the format given in Annexure - 1 can be used.

Term Evaluation (TE)

It is essential to assess the learning outcomes achieved through learning activities by each learner at the end of every term. The assessment of languages should be made considering areas like discourses, language elements, language skills based on the learning outcomes in the units considered in each term. Question models can contain various questions which stress the content areas and skills. For other subjects, assessment should be done based on the content- area of units considered in the term. Questions to assess skills and ideas which lay stress on learning outcomes can be prepared.

The question paper should be prepared after first preparing a design and then a blue print of question paper giving proper weights to units and learning outcomes, various thinking skills and different form of questions. Suitable scoring key and marking scheme should be prepared for each question and assessment should be done based on this scheme. Question-wise analysis should be prepared to review whether the questions are in accordance with the blue print and necessary editing should be done in the questions.

Details of thinking skills

Thinking skills are the mental processes that we apply when we seek to make sense of experiences. While setting the question paper, due weight should be given to the thinking skills, so as to ensure meaningful learning in every learner. Coverage of the range of skills has to be ensured in the question paper which expects the learners to respond within a stipulated period of time of assessment, keeping in view the difficulty level.

According to Anderson and Krathwohl ('A Taxonomy for Learning, Teaching and Assessing – Revised Blooms taxonomy') the range of categories, specific thinking skills / processes with its alternative processes / terms is given as follows;

CATEGORY / PROCESSES	ALTERNATIVE TERMS
1. Remember	**Retrieve relevant knowledge from long-term memory**
1.1. *Recognising*	identifying- (e.g. Recognize the dates of important events in Indian history)
1.2. *Recalling*	retrieving - (e.g. Recall the major exports of India)
2. Understand	**Construct meaning from instructional messages, including oral, written and graphic information**
2.1. *Interpreting*	clarifying, paraphrasing, representing, translating (e.g. Write an equation [using B for the number of boys and G for the number of girls] that corresponds to the statement 'There are twice as many boys as girls in this class')
2.2. *Exemplifying*	illustrating, substantiating (e.g. Locate an inorganic compound and tell why it is inorganic)
2.3. *Classifying*	categorizing, subsuming (e.g. Classify the given transactions to be recorded in Purchase returns book and Sales returns book)
2.4. Summarising	abstracting, generalizing (e.g. Students are asked to read an untitled passage and then write an appropriate title.)
*2.*5. *Inferring*	concluding, extrapolating, interpolating, predicting (e.g. a student may be given three physics problems, two involving one principle and another involving a different principle can be asked to state the underlying principle or concept the student is uses to arrive at the correct answer.)
*2.*6. *Comparing*	contrasting, mapping, matching (e.g. Compare historical events to contemporary situations)
2.7. Explaining	constructing models (e.g. the students who have studied Ohm's law are asked to explain what happens to the rate of the current when a second battery is added to a circuit.)
3. Apply	**Carry out or use a procedure in a given situation**
3.1. Executing	Carrying out (e.g. Prepare Trading and Profit and loss Account from the Trial Balance given to and find out the net profit.)

3.2. *Implementing*	using (e.g. Select the appropriate given situation where Newton's Second Law can be used)
4. Analyse	**Break material into its constituent parts and determin how the parts relate to one another and to an overall structure or purpose**
4.1. *Differentiating*	discriminating, distinguishing, focusing, selecting (e.g. distinguish between relevant and irrelevant numbers in a mathematical word problem)
4.2. *Organising*	finding coherence, integrating, outlining, parsing, structuring (e.g. the students are asked to write graphic hierarchies which best corresponds to the organisation of a presented passage.)
4.3. *Attributing*	deconstructing (e.g. determine the point of view of the author of an essay in terms of his or her ethical perspective)
5. Evaluate	**Make judgements based on criteria and standards**
5.1. *Checking*	coordinating, detecting, monitoring, testing (e.g. after reading a report of a chemistry experiment, determine whether or not the conclusion follows from the results of the experiment.)
5.2. *Critiquing*	judging (e.g. Judge which of the two methods is the best way to solve a given problem)
6. Create	**Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure**
6.1. *Generating*	hypothesizing (e.g. suggest as many ways as you can to assure that everyone has adequate medical insurance)
6.2. *Planning*	designing (e.g. design social intervention programmes for overcoming excessive consumerism)
6.3. *Producing*	constructing (e.g. the students are asked to write a short story based on some specifications)

Health - Physical Education - Assessment Method

Health - physical education will be considered as a cognitive area from 2014-15 academic year. During the adolescent stage, the physical and mental development of a child strengthens further. The

learners should be given the opportunity to get a proper awareness of health habits and the need to engage in physical activities. A performance assessment of the health - physical education is suggested. Details regarding this are given in the higher secondary level source book.

Assessment in Socio - Emotional Area

Assessment of social and emotional areas is as important as that of cognitive areas. Skills relating to Learning to know, Learning to do, Learning to live together and Learning to be should be considered here. The assessment of social and emotional areas should consider the following skills.

1. Communication skills
2. Interpersonal skills
3. Empathy
4. Coping with emotions
5. Coping with stress
6. Problem solving skills
7. Decision making
8. Critical thinking
9. Creative thinking skills
10. Self- awareness

The assessment should be carried out by teachers handling various subjects in cognitive areas. This assessment should be carried out as part of the learning process assessment in each subject. Along with the assessment of process skills, the assessment of related values and attitudes too should be done.

The skills in the socio - emotional area that can be beneficial for the proficiency of the learner should be identified and marked. The skills beneficial to each learner should be encouraged. The teacher can record these proficiencies in the Teacher Planner and the consolidated information in Annexure - 2.

Artistic, Social, Cultural and Vocational Proficiencies

To ensure the all-round development of a learner at the higher secondary level, not only appreciative, creative and artistic skills should be encouraged but an attitude towards undertaking social-cultural services should be inculcated. Every learner should get an

opportunity at least once in a month to participate in such activities. Higher Secondary Youth Festival, Career Guidance, Social Extension activities, National Service Scheme, N.C.C and various clubs should be made use of towards this effect.

All students at the higher secondary level should participate in atleast one of these activities. The proficiency of the learner in participating can be given a special grade certificate.

For Excellence in activity - A grade
Good - B grade
Satisfactory - C grade
Participation - D grade

Assessment - Annual Consolidation

The annual overall score of CE is the best score obtained by the learner in 3 terms. This can be entered in the column titled 'Final Score' in the format given in Annexure - 2. It is the total CE score of the learner in each subject. Now find the TE of each subject and find the total score adding CE and TE. This is the total score of a learner in one subject. In the case of subjects with practicals, the final score is calculated by including the score for practicals too.

Grading Scheme

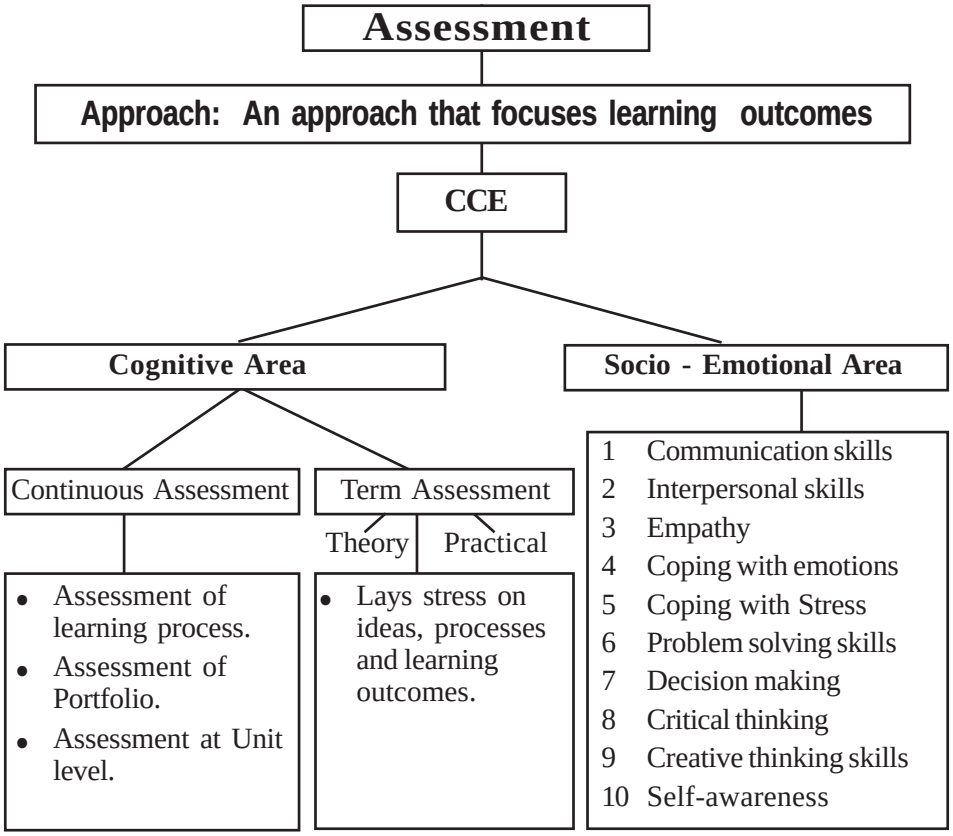
Higher Secondary level employs grading system to assess subjects in cognitive area. 9 Point Absolute Grading is used for this.

The table given below can be used for this.

Score Percentage	Grade
90-100	A+
80-89	A
70-79	B+
60-69	B
50-59	C+
40-49	C
30-39	D+
20-29	D
Below 20	E

To be eligible for higher studies, the learner in the higher secondary should get a minimum of D+ (30-39 %) for each subject in the combined score of CE +TE (Public exam). In addition, he should score a minimum of D+ for TE too.

The formats for assessment are given as Annexure I and II.



Subject Approach

The subject approach of Computer Applications for Commerce group is revised and designed as per the general approach envisaged by the Kerala School Curriculum 2013. The syllabus is modified according to this approach. Since Computer Applications is an optional subject under part III of the Higher Secondary Commerce stream, the content is developed in view of the fact that it should be useful to the commerce students for their higher studies and they should be able to use computer as a tool in accounting and other commercial and office applications. Besides, if somebody wishes a shift towards the IT field in higher education, the syllabus can cater to their needs. Although the field of computer applications continues to expand rapidly, it is not feasible to expand the size of the curriculum proportionately. As a result, the revision seeks to re-evaluate the essential topics in computer applications to make room for new topics within the available instructional hours. The curriculum approach of Computer Applications takes two aspects into consideration - knowledge domain and process domain.

Knowledge domain

The knowledge area of the curriculum of Class XII is a continuation to that of Class XI. The programming aspects to solve complex problems and handle complex data are introduced. Since we are in an era of Internet, a wide coverage is given to the contents required for designing web pages and developing web applications. Considering the stream, the knowledge domain is concluded by a briefing of Enterprise Resource Planning and an awareness about cyber crimes and IT laws.

The education that the higher secondary commerce students in computer applications receive adequately prepares them to use

computers and IT for the higher studies or workforce in a more holistic way than simply conveying technical facts. Indeed, soft skills (such as teamwork, verbal and written communication, time management, problem solving, and flexibility) and personal attributes (such as risk tolerance, humanity, patience, work ethic, identification of opportunity, sense of social responsibility, and appreciation for diversity) play a critical role in the world and hence the approach ensures the cultivation or nurturing of these skills.

Process domain

The outcome-focussed curriculum follows transactional strategies ensuring constructivist, acivity-based and process-oriented approach where learner is at the centre. This domain gives importance to gain the scientific and ligical method and develop interest for deeper investigation. While transacting the concepts through activities, it should be ensured that the students are attaining the skills along with learning outcomes.

Learning Process

While saying that computer applications study should become process-based, it does not mean that it is merely conducting activities. Each activity must have an aim. It should be ensured that the student has reached the aim. Conducting activities and not consolidating may not help in acquiring the result. The student must be able to identify what he / she has achieved when a learning process is completed. This will help him / her for further studies.

Conclusions are made on the basis of the evidences got from learning activities. The evidences and the conclusions made therein have to be evaluated critically. While subjecting the method followed and the activities to evaluation again, the opportunity to identify errors, if any, and rectifying them opens up. The derived concepts are accepted or rejected only after subjecting them to criticism with high standards of academic discipline. This is possible only in classrooms that function in a democratic way where there is room for free and fearless interaction.

Concept formation occurs during interaction with the teacher, interaction with friends, observation activities or engaging in experiments. Hence the student gets various kind of experiences.

Teaching Learning Strategies

The transactional strategies followed in the curriculum is learner centered and outcome focussed. Student has the responsibility and the right to construct knowledge. The teacher of modern times hence has to use instructional approaches that motivate the student to construct knowledge on his/her own.

Instructional strategies should be viewed as a social skill which is part of the educational environment and not as a technique to be mastered. They are to be considered as important components of teacher-student interaction and not as teacher activities alone. While instructional methods are planned the social and psychological aspects of the learner need to be taken into consideration.

Some instructional strategies are listed below, the details of which are covered in the Teacher Text of Class XI. We can apply any strategy ensuring that students attain the prescribed learning outcomes of Computer Applications subject.

- Discussion
- Demonstrations
- Assignments
- Information Communication Technology
- Problem Solving
- Seminar
- Project
- Debate
- Outdoor learning (Field trip and Study tour)
- Lab Work

Activity Log Book

The student carries out a number of activities as part of learning Computer Applications. Observations, collections, data organisations in tables, analysis, consolidation, algorithms, flowcharts and programs are some of these. The Activity Log Book

is a record of all activities that the student carries out in process based learning - problems faced, methods adopted to solve them and conclusions drawn. It is useful to the student as well as to others who want to evaluate the students' work and progress.

In short, the activity logbook is expected to be a comprehensive record of learning of a year. It is a record of all the learning experiences in Computer Applications that a student is given during a year. It is also an import item in portfolio evaluation as it reflects the learning evidence of the learner.

Recording

- The discussion points, individual responses, group findings, consolidation points etc. as part of learning activitiies are recorded.
- Problems and their solutions, planning to carry out all learning activities, etc. are recorded.
- Seminar paper, notes on demonstrations, report of field visit, assignment, etc.

The teacher may examine the activity log book of all students frequently and verify the following:

- Systematic and orderly nature of entries
- Continuity and comprehensiveness
- The quality of the students' participation.

Library

The library is as important as the laboratory. The school library is mostly used for language study. A lot of books related to the field of computer science and IT are available now. Books that are beneficial for learning and aquiring the concepts in depth are to be included in the school library as a separate category. Besides extra-reading materials, magazines and reading notes pertaining each lesson can be arranged in the class-reading corner. The students reading have to expand to greater knowledge domains.

Syllabus

1. Review of C++

1.1 Basics of C++
- 1.1.1 Various statements in a C++ program
- 1.1.2 Structure of a C++ program

1.2 Control statements
- 1.2.1 Selection statements
- 1.2.2 Looping statements

1.3 Nesting of loops

1.4 Jump statements
- 1.4.1 goto statement
- 1.4.2 break statement
- 1.4.3 continue statement

2. Arrays

2.1 Array and its need
- 2.1.1 Declaring arrays
- 2.1.2 Memory allocation for arrays
- 2.1.3 Array initialisation
- 2.1.4 Accessing elements of arrays

2.2 String handling using arrays

2.3 Memory allocation for strings

2.4 Input/Output operations on strings

3. Functions

3.1 Concept of modular programming
- 3.1.1 Merits of modular programming
- 3.1.2 Demerits of modular programming

3.2 Functions in C++

3.3 Predefined functions

3.3.1 Console functions for character I / O
3.3.2 Stream functions for I / O operations
3.3.3 String functions
3.3.4 Mathematical functions
3.3.5 Character functions

3.4 User-defined functions
3.4.1 Creating user-defined functions
3.4.2 Prototype of functions
3.4.3 Arguments of functions
3.4.4 Functions with default arguments
3.4.5 Methods of calling functions

3.5 Scope and life of variables and functions

4. Web Technology

4.1 Communication on the web
4.1.1 Client to web server communication
4.1.2 Web server to web server communication

4.2 Web server technologies
4.2.1 Web server
4.2.2 Software ports
4.2.3 DNS servers

4.3 Web designing

4.4 Static and dynamic web pages

4.5 Scripts
4.5.1 Types of scripting languages (Client side scripting, Server side scripting)
4.5.2 Scripting languages (JavaScript, VB Script, PHP, Active Server Pages, Java Server Pages)

4.6 Cascading Style Sheet

4.7 Basic concepts of HTML documents
4.7.1 Basic structure of an HTML document
4.7.2 Tags in HTML document

5.1.3 Definition lists

5.1.4 Nested lists

5.2 Creating links

5.2.1 Internal linking

5.2.2 External linking

5.2.3 Concept of URL

5.2.4 Creating graphical hyperlinks

5.2.5 Creating e-mail linking

5.3 Inserting music and video

5.4 Creating tables in a web page

5.4.1 <TABLE> tag

5.4.2 <TR> tag

5.4.3 <TH> tag

5.4.4 <TD> tag

5.4.5 Table caption with <CAPTION> tag

5.5 Dividing the browser window

5.5.1 <FRAMESET> tag

5.5.2 <FRAME> tag

5.5.3 Targeting frames

5.5.4 Nesting of framesets

5.5.5 <NOFRAMES> tag

5.6 Forms in web pages

5.6.1 <FORM> tag

5.6.2 <INPUT> tag

5.6.3 <TEXTAREA> tag

5.6.4 <SELECT> tag

5.6.5 Grouping Form data with <FIELDSET> tag

5.6.6 Form submission

5.7 Overview of HTML 5

6. Client side scripting using JavaScript

- 6.1 Getting Started with JavaScript
- 6.2 Creating functions in JavaScript
- 6.3 Data type in JavaScript
- 6.4 Variable in JavaScript:
- 6.5 Operators in JavaScript:
  - 6.5.1 Arithmetic operators
  - 6.5.2 Assignment operators
  - 6.5.3 Relational operators (Comparison operators)
  - 6.5.4 Logical operators
  - 6.5.5 String addition operator (+)
- 6.6 Control structures in JavaScript
  - 6.6.1 if
  - 6.6.2 Switch
  - 6.6.3 for loop
  - 6.6.4 while loop
- 6.7 Built-in Functions
- 6.8 Accessing Values in a textbox using JavaScript
- 6.9 Ways to add scripts to a webpage
  - 6.9.1 Inside <BODY>
  - 6.9.2 Inside <HEAD>
  - 6.9.3 External JavaScript file

7. Web Hosting

- 7.1 Web hosting
  - 7.1.1 Types of web hosting
  - 7.1.2 Buying hosting space
  - 7.1.3 Domain name registration
  - 7.1.4 FTP client software
- 7.2 Free hosting

7.3 Content Management System

7.4 Responsive web design

8. Database Management System

8.1 Concept of Database

8.1.1 Need of database

8.1.2 Advantages of DBMS

8.2 Components of the DBMS environment

8.3 Data Abstraction, Data Independence

8.3.1 Data independence

8.4 Users of Database

8.4.1 Database Administrator

8.4.2 Application programmers

8.4.3 Sophisticated users

8.4.4 Naive users

8.5 Relational Data Model

8.6 Terminologies in RDBMS

8.6.1 Keys

8.7 Relational algebra

8.7.1 SELECT operation

8.7.2 PROJECT operation

8.7.3 UNION operation

8.7.4 INTERSECTION operation

8.7.5 SET DIFFERENCE operation

8.7.6 CARTESIAN PRODUCT operation

9. Structured Query Language

9.1 Structured Query Language

9.1.1 Features of SQL

9.1.2 Components of SQL

10. Enterprise Resource Planning

10.1 Overview of an enterprise
10.2 Concept of Enterprise Resource Planning
10.3 Functional units of ERP
10.4 Business Process Re-engineering
10.5 Implementation of ERP
10.6 ERP solution providers/ERP packages
10.7 Benefits and risks of ERP
    10.7.1 Benefit of ERP system
    10.7.2 Risks of ERP implementation
    10.7.3 ERP and related technologies

11. Trends and Issues in ICT

11.1 Mobile computing
11.2 Mobile communication
    11.2.1 Generations in mobile communication
    11.2.2 Mobile communication services
11.3 Mobile operating system
11.4 ICT in business
    11.4.1 Social networks and big data analytics
    11.4.2 Business logistics
11.5 Information security
    11.5.1 Intellectual Property Right
    11.5.2 Infringement
    11.5.3 Cyber space
    11.5.4 Cyber Crimes
    11.5.5 Cyber ethics
    11.5.6 Cyber laws
    11.5.7 Information Technology Act 2000 (Amended in 2008)
    11.5.8 Cyber Forensics
    11.5.9 Infomania

Learning Outcomes

Chapter 1: Review of C++ Programming

1.1 Uses input statements in programs to enter data into the computer.

1.2 Uses output statements in programs to display various forms of output.

1.3 Applies various forms of if statements to make decisions while solving problems.

1.4 Compares else if ladder and switch statement.

1.5 Distinguishes different looping statements of C++.

1.6 Uses the concept of nested loop in problem solving and predicts the output.

1.7 Identifies the effect of break and continue statements in loops by explaining their effect on the program flow.

Chapter 2: Arrays

2.1 Recognises the need for arrays.

2.2 Identifies the situations where an array can be used.

2.3 Uses arrays to refer to a group of data.

2.4 Declares an array and design the way of coding.

2.5 Identifies how memory allocation is done for array.

2.6 Accesses the elements in an array.

2.7 Develops program for array traversal.

2.8 Solves problems in which large amount of data is to be processed.

2.9 Represents string using character arrays.

2.10 Explains the memory allocation for strings.

2.11 Carries out various word processing operations using character arrays.

Chapter 3: Functions

3.1 Identifies the merits of modular programming in problem solving.

3.2 Classifies various input output functions for character and string data.

3.3 Compares character input functions.

3.4 Uses appropriate character and string functions for I/O operations.

3.5 Applies mathematical functions for solving problems.

3.6 Uses string functions for the manipulation of string data.

3.7 Manipulates character data with predefined character functions.

3.8 Implements modular programming by creating functions.

3.9 Identifies the role of arguments and compares different methods of calling.

3.10 Recognises the scope and life of variables and functions in a program.

Chapter 4: Web Technology

4.1 Explains the need of secure communications.

4.2 Describes web server and web hosting.

4.3 Differentiates static and dynamic web pages.

4.4 Identifies the difference between programming languages and scripts.

4.5 Explains different types of scripting languages.

4.6 Compares different types of scripting languages.

4.7 Identifies the basic HTML tags.

4.8 Lists fundamental HTML tags and attributes.

4.9 Classifies HTML tags.

4.10 Identifies the formatting tags and attributes.

4.11 Identifies the similarities and differences among formatting tags.

4.12 Uses the tags <PRE> and <DIV> .

4.13 Provides scrolling to the objects and contents in a web page.

4.14 Uses <FONT> Tag to make text attractive.

4.15 Uses comments in HTML.

4.16 Inserts images into html documents.

Chapter 5: Web Designing using HTML

5.1 Distinguishes various types of lists available in HTML.

5.2 Links various web pages and sections within a webpage

5.3 Embeds various audio, video files in a webpage.

5.4 Embeds inline audio video.

5.5 Lists various tags and attributes in creating a table.
5.6 Compares tags such as TD TH and their attributes and uses.
5.7 Illustrates the creation of Table.
5.8 Illustrates the use of frames and framesets.
5.9 Creates frames.
5.10 Explains the use of forms in HTML.
5.11 Lists the use of forms in html and its components.
5.12 Creates a webpage with all the features discussed so far.

Chapter 6: Client Side Scripting Using Javascript

6.1 Distinguishes the use of client side and sever side scripting language.
6.2 Explains the need of client side scripting language.
6.3 Identifies the importance of JavaScript as the client side scripting language.
6.4 Uses JavaScript functions in a web page.
6.5 Explains different data types in JavaScript.
6.6 Uses correct variables in JavaScript.
6.7 Uses appropriate control structures in program codes.
6.8 Uses appropriate built-in functions in JavaScript.
6.9 Explains the method to access document elements using JavaScript.
6.10 Creates JavaScript functions that handle values in text boxes and combo boxes.

Chapter 7: Web Hosting

7.1 Describes the use of a web server and the concept of web hosting.
7.2 Classifies different types of hosting.
7.3 Explains the ways to buy hosting space.
7.4 Registers a domain and hosts a website using FTP client software.
7.5 Explains the features of free hosting.
7.6 Identifies the use of Content Management Systems.
7.7 Describe the need for responsive web design.

Chapter 8: Database Management System

8.1 Recognizes the need for files.

8.2 Identifies the major limitations of the conventional file management system.

8.3 Lists and explains the different advantages of the database management system.

8.4 Lists the various components of the DBMS and explains their purpose.

8.5 Recognizes the types of users and their roles in the DBMS environment.

8.6 Explains the levels of data abstraction and data independence in DBMS.

8.7 Explains the relational model by citing examples.

8.8 Uses the different terminologies in RDBMS appropriately.

8.9 Applies and evaluates the various operations in relational algebra.

Chapter 9: Structured Query Language

9.1 Recognises the importance and features of Structured Query Language.

9.2 Explains the components of SQL.Distinguishes the features of DDL, DML and DCL commands.

9.3 Identifies the characteristics of MySQL Lists different data types and their features.

9.4 Explains the effect of different constraints.

9.5 Performs operations using DDL commands like CREATE, ALTER, DROP.

9.6 Uses DML commands like SELECT,INSERT, UPDATE, DELETE for data manipulationIdentifies various clauses associated with SQL commands and their purpose.Uses operators for setting different conditions.

9.7 Lists different aggregate functions and their usage.

9.8 Constructs nested queries for information retrieval.

Chapter 10: Enterprise Resource Planning

10.1 Identifies the need of ERP.

10.2 Lists different functional units of ERP.

10.3 Explains the importance of BPR in ERP implementation.

10.4 Recognize different phases in implementing ERP.
10.5 List some important ERP packages.
10.6 Explain benefits and risks of ERP implementation.
10.7 Become familiar with some related technologies of ERP.

Chapter 11: Trends and Issues in ICT

11.1 Identifies the various mobile computing technologies.
11.2 Details generations in mobile communication.
11.3 Uses mobile communication services.
11.4 Recognises the features of mobile operating system.Discovers the features of Android operating system.
11.5 Applies ICT in business.
11.6 Lists and explains various intellectual property rights.
11.7 Explains cyber space.
11.8 Distinguishes different types of cyber crimes.
11.9 Explains cyber laws and ethics.Scope of cyber forensics.
11.10 Identifies the importance of IT act.
11.11 Recognises infomania.

Scheme of Work

Term	Month	Chapter
First	June	1. Review of C++ Programming (20 periods)
		2. Arrays (15 periods)
	July	3. Functions (20 periods)
	August	4. Web Technology (25 periods)
Second	September	5. Web Designing using HTML (20 periods)
		6. Client side scripting using JavaScript (25 periods)
	October	7. Web Hosting (10 periods)
	November	8. Database Management System (15 periods)
	December	9. Structured Query Language (25 periods)
Third	January	10. Enterprise Resource Planning (10 periods)
	February	11. Trends and Issues in ICT (20 periods)

Part II

1 Review of C++ Programming

Introduction

The learner has learned about the basic concepts of C++ language in the previous year. This chapter is actually a quick recap of the concepts and skills they acquired about C++ programming ideas in Standard XI. Some advanced features of loops like nested loop and jump statements are also discussed in this chapter. We know that the control statements are the backbones of a computer program. From this chapter, the learners should get a strong concept about writing programs including various control structures. The teacher should provide learners with the maximum number of sample programs to create a solid idea on programming.

Values and Attitudes

- ✓ Improves decision making capability.
- ✓ Develops operational steps systematically to solve problems.
- ✓ Increases the power of logical reasoning.
- ✓ Appreciates C++ programming for developing programs.

Unit Frame

Periods: 20

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
• Basics of C++ Control statements Looping statements ✓ Understanding ✓ Communicating ✓ Observing ✓ Analysing	A Group Quiz is conducted to evaluate the concepts they acquired last year. Lab work to familiarise them with the execution of C++ programs with various control structures. A class test is conducted to get the correct picture of acquired knowledge of learners about C++, they had studied the previous year. If not satisfied, remedial classes may be conducted by the teacher. ***Assessment:*** ➢ Worksheet 1.1 ➢ Preparation of chart to display the characteristics of different loops. ➢ Preparation of notes.	1. Uses input statements in programs to enter data into the computer. 2. Uses output statements in programs to display various forms of output. 3. Applies various forms of if statements to make decisions while solving problems. 4. Compares else if ladder and switch statements. 5. Distinguishes different looping statements of C++.
• Nested loops ✓ Understanding ✓ Communicating ✓ Observing ✓ Analysing	A general discussion is conducted on nested loops. Lab work to familiarise the execution of nested loops. ***Assessment:*** ➢ Preparation of notes.	6. Uses the concept of nested loop in problem solving and predicts the output.
• Jump statements - break, continue, goto and exit() function	A general discussion is conducted on nested loops. Lab work to familiarise the execution of various loops using the concept of nesting. ***Assessment:*** ➢ Preparation of chart shows the characteristics of different jump statements. ➢ Preparation of notes. ➢ Worksheet 1.2	7. Identifies the effect of break and continue statements in loops by explaining their effect on the program flow.

Process Assessment

General discussions, Group quiz, Activity Log preparation, Lab work.

Portfolio Assessment

Activity log book, CPP files, Practical log book.

Unit-wise Assessment

- Written test can be conducted using the questions given in the *Let us do* boxes, *Know your progress* boxes and sample questions provided in the text book.
- Lab work

Towards the Unit:
Content 1.1 Review of C++

(2 Periods)

Suggested activity: Group quiz to revise the basic concepts of C++ programming, Notes preparation.

Students are divided into several groups and each group is assigned a job of preparing different questions (objective type) based on the topic they had learned the previous year.

The group leader should ensure the participation of all group members in the drafting of questions.

The accuracy of the questions is evaluated by peer evaluation of group members.

The group which tells the correct answer gets 2 points. If a group cannot answer the question, the question is passed to the next group in the clockwise direction. If the question is evaluated as invalid, a negative mark is given to the team which raises the question.

The group leader should ensure the participation of all the group members in the quiz programme by providing opportunity to ask questions and to answer them.

If a question is not answered by any of the groups, teacher takes suitable strategies to transact the concept.

All group members should note the question and answer in their log book.

The team which scored maximum points is declared as the winner and prizes are given to them.

PE Questions

Refer to the questions given in the textbook and Part III of Teacher Text.

TE Questions

1. *LO : 1.3* *Type : Objective* *Score : 3*

Read the following program code segment:

```
if (num>0)
  cout<<num++;
else
  cout<<--num;
```

(a) What will be the output of this code, if the initial value of num is 10?

(b) What will be the output of this code, if the initial value of num is 0?

(c) What will be the output of this code, if the initial value of num is -5?

PS: CA

SI: (a) 10 (b) -1 (c) -6

2. *LO : 1.3* *Type : Objective* *Score : 2*

Predict the output of the following program code segment for the two cases given below:

(a) If the input value is 500.

(b) If the input is 1000.

```
int val, res, n=1000;
cin>>val;
res = n+val > 1800 ? 400 : 200;
cout<<res;
```

PS : CA

SI : (a) 200 (b) 400

3. *LO : 1.4* *Type : Short answer* *Score : 3*

Predict the output of the following program code if we give

i) 0 as input ii) 2 as input ii) 7 as input

Justify your answer.

```
int a;
cin>>a;
switch(a)
{
      case 0 : cout<<" Zero";
      case 1 : cout<<" One";
      case 2 : cout<<" Two";
               break;
      default: cout<<"Invalid number";
 }
```

PS : CA

SI : i) Zero One Two (*No* `break` *statement after each statement*).

ii) Two

iii) Invalid number

4. *LO : 1.4* *Type : Short answer* *Score : 3*

Consider the following statements in C++. Re-write this using `if .... else`.

```
switch(ch)
       {
       case 'a': cout<<"Apple";
                 break;
       case 'b': cout<<"Ball";
                 break;
       case 'c': cout<<"Cat";
                 break;
       default : cout<<"Invalid choice";
       }
```

PS : CG

SI : Correct code

5. *LO : 1.3* *Type : Short answer* *Score : 3*

Replace the following conditional statement with `if` statement in C++.

```
min=(a<b) ? (a<c? a:c) : (b<c? b:c);
```

PS : CG

SI : Correct code

6. *LO : 1.6* *Type : Short answer* *Score : 2*

Consider the following program segment. How many times will the text "welcome" be printed on the screen? State the reason.

```
for(i=0 ; i< 10; i=i+2);
cout<<" welcome ";
```

PS : CG

SI : Once, because there is ; (semi colon) after the `for` loop.

7. *LO: 1.6* *Type : Objective* *Score : 1*

Read the following program code:

```
for (int i=1; i<10; i++);
      cout<<i;
```

Which of the following statements are correct?

(a) There is a syntax error in the loop.

(b) The numbers 1, 2, 3, ……., 9 will be printed.

(c) The number 10 will be displayed.

(d) Only the number 1 will be printed.

PS : CG

SI : The number 10 will be displayed.

8. *LO : 1.6* *Type : Objective* *Score : 1*

How many times will the following loop be executed?

```
int S = 0, i = 0;
do
{
   S+= i;
   i++;
}while(i <= 5);
```

PS : CG

SI : 6 times

9. *LO : 1.9* *Type : Objective* *Score : 1*

A `break` statement causes an exit

(a) only from the innermost loop
(b) only from the innermost switch
(c) from all loops and switches
(d) from the innermost loop or switch

PS : CG

SI : (d).

10. *LO : 1.9* *Type: Objective* *Score : 1*

The `exit()` function breaks out of

(a) the function it appears in (b) the loop it appears in

(c) the block it appears in (d) the program it appears in

PS : CG

SI : (d).

11. *LO : 1.4* *Type : Short answer* *Score : 3*

Write a `switch` construct to get the following result.

If total marks >=90 Grade A

80<= total marks <90 Grade B

70<= total marks < 80 Grade C

total marks < 70 Failed

PS : CG

SI : Correct code using `switch` (perc = marks/10; switch(perc)…)

12. *LO : 1.8* *Type : Essay* *Score : 5*

Write down the code segment for the output given below:

1

3

5

7

9

The sum is 25

PS : CG

SI : Correct code.

13. *LO : 1.8* *Type : Essay* *Score : 5*

Rewrite the following code using `while` loop and `do - while` loop.

```
for(int i=2, sum=0; i <= 20; i=i+2)
    sum += i;
```

PS : CG

SI : Correct code

14. *LO : 1.8* *Type : Short answer* *Score : 3*

Rewrite the following code using `do - while` loop.

```
for(s=0,i=1;i<=10;  s+=i,++i);
    cout<<s;
```

PS : CG

SI : Correct code

15. *LO : 1.7* *Type : Short answer* *Score : 3*

Predict the output of the following program code.

```
for(a=5; a<=7; ++a)
    for(b=1; b<=3; ++b)
          cout<< "\n" <<  a << "X" <<b << "="<<a*b;
```

PS : CG

SI : Correct output.

16. *LO : 1.8* *Type : Short answer* *Score : 3*

Differentiate between `break` and `continue` statements.

PS : CG

SI : Correct answer.

17. *LO : 1.8* *Type : Short answer* *Score : 3*

Predict the output for the following program code:

```
for (i=1;i<=10;++i)
{
     if (i==7)
          continue;
     cout<<"\t";
     cout<<i;
}
```

PS : CG

SI : 1 2 3 4 5 6 8 9 10

18. *LO : 1.8* *Type : Essay* *Score : 5*

Write a program to produce the following pattern:

A

B B

C C C

D D D D

PS : CG

SI : Correct code using nested loop.

19. *LO : 1.8* *Type : Essay* *Score : 5*

Write a program to produce the following pattern:

4

4 3

4 3 2

4 3 2 1

PS : CG

SI : Correct code using nested loop.

20. *LO : 1.8* *Type : Essay* *Score : 5*

Write a program to find the sum of the first N natural numbers using.

a) Entry controlled loop

b) Exit controlled loop

PS : CG

SI : Correct code

21. *LO : 1.6* *Type : Short answer* *Score : 4*

Identify the four components of the loop given below and fill up the second column of the table with them.

```
for(int n=125, s=0; n>0; s+=n%10, n/=10);
```

Initialisation expression	
Test expression	
Update expression	
Body of the loop	

PS : CG

SI : Correct answer

Worksheet 1.1

1. How is decision making implemented in a C++program?
2. Write the four components of a loop.
3. Write the names of entry controlled loops.
4. Which loop is called exit controlled loop? Why?
5. Why are `for` and `while` loops called entry controlled loops?
6. Write the significance of `break` statement in `switch` statement.

Worksheet 1.2

1. _____ statement is used for unconditional jump in a program.
2. The identifier used with `goto` statement is known as _____.
3. In a nested loop, the outer loop variable updates its value only when _____.
4. _____ statement is used to exit a loop even if the condition is true.

2 Arrays

Introduction

In the previous chapter, we revised the basics of programming in C++ covered in Class XI. We have also learnt more about control structures in C++ and their applications in problem solving. While solving problems we used variables to refer to data to be processed. But there may be situations where we need many variables of the same data type. Then, we need to introduce alternate solution to address the variables. The grouping up of related variables together is discussed in this chapter. At this stage, the learner identifies the difference between a variable and an array. The learner must recognise the advantages of using the arrays in programs. Teacher is expected to make use of real life cases for introducing the concept of arrays. This unit explores single dimensional and two dimensional arrays and their usage in programming. The learners are exposed to the creation and initialization of arrays. Though various operations are performed on arrays, we dicuss only traversal operation in this chapter. Towards the end, we also discuss how strings are handled using arrays. The teacher can give maximum sample programs to make the students get acquainted with arrays.

Values and Attitudes

- ✓ Familiarise with the systematic organisation of data.
- ✓ Crave for the best and ideal way to optimize the results.
- ✓ Explore new ways to reach the solution with minimum effort and time.

Unit Frame

Periods: 15

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Concept of arrays and its need in problem solving ✓ Communicating ✓ Understanding	General discussion on the concept of arrays using real life examples. Discussion on the need for grouping variables of similar data type. ***Assessment:*** ➢ Preparation of notes	1. Recognises the need for arrays. 2. Identifies the situations where an array can be used. 3. Uses arrays to refer to a group of data.
Declaration of arrays, memory allocation, initialization and accessing elements in an array. ✓ Identifying ✓ Illustrating ✓ Communicating ✓ Familiarising	General discussion followed by illustration. Problem solving, Lab work etc. ***Assessment:*** ➢ Preparation of notes ➢ Lab work	4. Declares an array and designs the way of coding. 5. Identifies how memory allocation is done for an array.
Array operation - Traversal ✓ Communicating ✓ Problem solving ✓ Experimenting	General discussion followed by demonstration with the help of computer and LCD projector or chart or blackboard. Problem solving. ***Assessment:*** ➢ Worksheet ➢ Lab work	6. Accesses the elements in an array. 7. Develops a program for array traversal.
Problem solving using arrays ✓ Communicating ✓ Identifying ✓ Problem solving ✓ ICT skills	Group discussion followed by illustration or demonstration using computer and LCD projector. Lab work. ***Assessment:*** ➢ Lab assignment, output prediction, error correction etc.	8. Solves problems in which large amount of data is to be processed.
String handling using arrays and the concept of memory allocation. ✓ Communicating ✓ Problem solving ✓ Experimenting	Discussion followed by illustration. Problem solving. ***Assessment:*** ➢ Worksheet ➢ Lab assignment ➢ Preparation of notes	9. Represent string using character arrays. 10. Memory allocation for strings.

Concepts/Ideas Process skills	Process/Activities with Assessments	Learning outcomes
Input-Output operations using arrays. ✓ Understanding ✓ Communicating ✓ Familiarising ✓ Problem solving	General discussion on various operations using character arrays. Problem solving using real-life cases. Demonstration using slides, lab demonstration. ***Assessment:*** ➢ Preparation of notes, Lab assignment, worksheet	11. Carries out various word processing operations using character arrays.

Process Assessment

- Problem solving using arrays.
- Demonstration of traversal by students.
- Assignment on the topic *String handling using arrays*.
- Lab work on problem solving using arrays, traversal etc.

Portfolio Assessment

- Activity log book.
- Assignments.
- Worksheets.
- Practical log book.

Unit Assessment

- Lab test
- Written tests on selected topics
    - o Students can be assigned to prepare questions based on a topic.
    - o The questions brought by the students must be analysed by the teacher and modifications can be suggested.
    - o The teacher can also contribute questions so that a pool of questions can be collected.
    - o Each learner can pick two questions from the pool and answer those questions.

Towards the Unit:

The teaching-learning activities for this chapter can be general discussion, group discussion, lab demonstration, illustration etc. The teacher has the freedom to transact the content using any suitable activity.

For assessment, the teacher can conduct activities like worksheets, assignment, writing sample programs etc. and the hard copies of tests, assignment, worksheets etc. can be kept as part of portfolio.

Following are the details of some typical teaching-learning activities identified for this chapter.

Need of Arrays

(Period 1)

Suggested Activity: Group discussion

The teacher begins the class by asking some questions and reminds the class about the concept of variables they studied in Class XI.

Teacher divides the students into four groups for conducting a group discussion. He/she initiates the group activity by giving some discussion points.

- Teacher asks each group to declare one variable to store the mark of one student in the class test for Computer Applications.
- Learners respond. Allow them a peer evaluation in the group.
- Teacher evaluates.
- Teacher wants the learners to declare the variables for accepting the marks of six students in the class.
- Learners respond by declaring six independent integer variables (possibly). The variable names may be a, b, c, d, e, and f or m1, m2, m3, m4, m5 and m6.
- Give the learners a chance for peer evaluation.
- Teacher now asks the students to declare variables for storing the marks of sixty students in the class.
- Learners may find it tedious and time consuming to declare too many variables of the same type.

- Each group discusses among themselves and presents their findings.
- Teacher evaluates.
- Teacher consolidates the discussion by introducing the need for declaring arrays and the syntax of array declaration.
- Instructs the students to prepare notes.

Traversal operation on arrays

(Periods 2)

Suggested Activity: Demonstration followed by discussion

- The teacher initiates the discussion by posing some questions related to this topic. The questions can be as follows:
    - o How do you declare 20 variables of integer type using a single C++ statement?
    - o Which is the lowest index of an array?
    - o How do you store 20 numbers into the above array?
    - o How do you print the array elements?
- The learners respond and write C++ statements in the book.
- The teacher takes a bunch of twenty paper cards. Each card contains a number. He/she gives one bunch to a student and asks him to find the sum of all the numbers labeled in the cards.
- The learner goes through all the cards and notes down the labeled number on a sheet of paper. He/she actually processes the bunch of cards.
- The teacher invites the attention of the students by comparing the bunch of cards with array. Each of the cards represents the array element and the labeled number, the content of the array variable.

  (The teacher can use some other real life examples for explaining traversal. A student visits all the classes in the school with a notice from the Principal, the newspaper boy goes to each and every house one after another for dropping newspaper in the morning etc.)
- Teacher introduces the array operation traversal.
- Teacher illustrates traversal by solving a simple problem.
- The teacher instructs the learners to note down the algorithm/points.

Memory allocation for strings

(Period 2)

Suggested Activity: Roleplay

A role-play can be conducted based on this topic. Teacher identifies some students from the class prior to this activity.

The activity is initiated by a general talk / discussion by the teacher about the memory allocation.

- The teacher wants the learners to stand side-by-side in a row (similar to an array). One row contains 3 students; another one contains 4 and yet another 5. So there are three different arrays with different size.
- The teacher writes a word on the blackboard. For example he writes the name 'RAJU'.
- The teacher wants the first set of students (size 3) to come forward and spell the name on the board. The first student has to speak out the letter 'R', that means allocating space for that letter. The next student in the row speaks out 'A' and so on. Finally nobody to speak out the last letter. So students identify that the size is insufficient.
- The teacher again wants the second set with size 4 to try out the same activity. In this case, the students find difficulty to hold the null character ('\0') as the last character.
- The teacher finally wants the third set of students (size 5) to do the same. In this case, there is sufficient space for holding the characters in the string and the null character.
- Teacher monitors the play and the same can be repeated with another string and another set of students.
- Teacher consolidates the activity by reinforcing the concept of memory allocation for strings. He compares the memory allocation of arrays while storing numbers. Asks the learners to find out the main difference.
- Students note down the points.

TE Questions

1. *L.O 2.1* *Type : Objective* *Score : 1*

   Which of the following is the correct declaration of an array?

   a. `int m(10)` b. `int [10]m` c. `m[10] int` d. `int m[10]`

   PS : CA

   SI : d.

2. *L.O 2.1* *Type : Objective* *Score : 1*

   Identify the last index of the array `float P[8];` from the following choices.

   a. 7 b. 8 c. 0 d. 9

   PS : CA

   SI : a.

3. *L.O 2.4* *Type : Objective* *Score : 1*

   Consider the following C++ statements:

   ```
   int A[4] = {1,2,3,4};
   int B = (A[3]+A[0]+A[2]) / A[1];
   ```

   Predict the value of the variable `B`.

   PS : CG

   SI : 4

4. *L.O 2.4* *Type : Objective* *Score : 1*

   Consider the following array declaration,

   ```
   int  A[]={4,5,8} ;      int B[]={2,10};
   ```

   Write a valid C++ statement for finding the difference between the last element of the array `B` and the first element of the array `A`.

   PS : CG

   SI : B[1] and A[0];

5. *L.O 2.6* *Type : Objective* *Score : 1*

   Write a statement for storing the string "NO SMOKING" using a character array with name `ARR` of minimum size.

   PS : CA

SI : `char ARR[11] = "NO SMOKING";` or
`char ARR[] = "NO SMOKING";`

6. *L.O 2.4* *Type : Objective* *Score : 1*

Suppose `NUM` is an array containing integer numbers. Identify the name of the operation in which all the elements of the array are increased by 1 with the help of ++ operator.

PS: CA

SI : Traversal

7. *L.O 2.4* *Type : Objective* *Score : 1*

If `int M[20];` is an array, then which element of the array will be referenced by `M[11]` ?

PS: CA

SI: 12th element of the array

8. *L.O 2.6* *Type : Objective* *Score : 1*

How many bytes will be allocated in the memory to store the string "MY SCHOOL"?

PS: CA

SI : 10 bytes

9. *L.O 2.7* *Type : Objective* *Score : 1*

What will be the output of the following code segment if the input is "Computer Applications"?

```
char WORD[15];
cin>>WORD;
cout<<WORD;
```

PS: CA

SI : Computer

10. *L.O 2.6* *Type : Objective* *Score : 1*

The following code segment does not give 6 as the output. Why?

```
char N[]="123";
cout<<(N[0]+N[1]+N[2]);
```

PS: CG

SI : Since N is a character array the individual elements will be treated as characters. Therefore addition is not possible. ASCII values will be added.

11. *L.O 2.3* *Type : Short answer* *Score : 2*

Suppose you need to store the numbers 5, 2.4, 0.1 and 8 into the array NUM. Write two possible solutions to this problem (write the C++ statement).

PS: CA

SI : 1 score for each correct answer.

Method 1: `float NUM[4] = {5, 2.4, 0.1, 8};`

Method 2: `float NUM[ ] = {5, 2.4, 0.1, 8};`

12. *L.O 2.4* *Type : Short answer* *Score : 2*

Predict the output of the following code:

```
int a[5], sum=0, i;
for( i=0; i<5; i++)
{
  a[i] = i+1;
  sum+=a[i];
}
cout<<sum;
```

PS: CG

SI : 15

13. *L.O 2.4* *Type : Short answer* *Score : 2*

A student used two different statements for reading a string "RAM KUMAR" as follows. In both cases the string is printed. Compare the outputs and give reason.

Method 1

```
char AR[20];
cin>>AR;
cout<<AR;
```

Method 2

```
char AR[20];
gets(AR);
cout<<AR;
```

PS: CG

SI : In the first method, the output will be RAM and in the second case, the output will be RAM KUMAR.

14. *L.O 2.4* *Type : Short answer* *Score : 2*

Consider the following statements and predict the output.

```
int N[]={2,5,6,3,7,4}, s=0;
for(int i=0; i<6; i++)
{
  if(N[i]%2==0)
       s=s+N[i];
}
cout<<s;
```

PS: CG

SI : 12 (sum of all even numbers).

15. *L.O 2.6* *Type : Short answer* *Score : 3*

Write suitable statements to accept a string from the keyboard and find its length. For example, if "WELCOME" is accepted, the output will be 7.

PS: CA

SI : For the correct statements.

16. *L.O 2.4* *Type : Short answer* *Score : 3*

Write statements to declare an array and initialize it with the numbers 1, 2, 3, 4, 5 and print 5, 4, 3, 2, 1.

PS: CA

SI : Correct code

17. *L.O 2.1 and 2.2* *Type : Short answer* *Score : 3*

Write array declarations for the following:

a. To store the heights of 25 students in your class.

b. To store the name of your school.

c. To store all odd numbers between 2 and 20.

PS: CA

SI: a. `float m[25]`, b. `char name[50]`, c. `int n[9]`.

18. *L.O 2.6* *Type : Short answer* *Score : 2*

Consider the following cases and predict the output:

i. `char ch[] = "hai"; cout<<"hello"; cout<<ch;`

ii. `char ch[] = "hai"; puts("hello"); puts(ch);`

PS: CA

SI : Case 1 - `hellohai` (printing in the same line)

Case 2 - Prints in separate lines

```
hello
hai
```

19. *L.O 2.6* *Type : Short answer* *Score : 3*

Write statements to store the string "INDIA" in an array and print as follows:

I

N

D

I

A

PS: CA

SI : Correct code

20. *L.O 2.4* *Type : Short answer* *Score : 3*

Predict the output of the following code fragment:

```
int K[ ]={1, 2, 3, 4};
for(int i=0; i<4; i++)
      cout<<K[i] * K[i]<<"\t";
```

PS: CA

SI : Correct output (1 4 9 16)

21. *L.O 2.5* *Type : Short answer* *Score : 3*

Write C++ statements to accept the marks of a student in 6 subjects using an array and calculate his total mark and average mark (complete program not needed).

PS: CA

SI : Correct code

22. *L.O 2.4* *Type : Short answer* *Score : 3*

Consider the following array declaration. Write statements to count the positive numbers.

```
int p[]= {-5, 6, -7, 0, 8, 9};
```

PS: CA

SI : Correct code

23. *L.O 2.6* *Type : Essay* *Score : 5*

Write a C++ program to accept a sentence and count how many times the letter 's' occurs in it. For example, the sentence may be 'This is my school'.

PS: CA

SI : Correct program

24. *L.O 2.6* *Type : Essay* *Score : 5*

Write a C++ program to reverse the given string. For example, if ABCD is given, the output will be DCBA.

PS: CA

SI : Correct program

25. *L.O 2.7* *Type : Essay* *Score : 5*

Write a program to accept 10 integer numbers into an array and find the largest and the second largest numbers.

PS: CA

SI : Correct program

3 Functions

Introduction

This unit introduces the concept of modular programming and reusability of codes through the use of functions. At this stage, learner identifies the difference between normal structured programming and modular programming, and recognises the need for and the advantages of using functions. In the next session, predefined and user defined functions are introduced. Important math, string, character, conversion and manipulation predefined functions are to be introduced to learners through examples. Following this, the unit introduces the creation of user defined functions, the function prototype and arguments to learners. The unit then introduces functions with default arguments and explores the different ways of passing arguments (like by value and by reference). The scope and life-time of variables and functions are discussed to conclude the chapter.

Values and attitudes:

- Team work can solve any problem
- Any problem can be solved if it can be decomposed into smaller problems.

Unit Frame

Period : 20

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
• Concept of modular programming. ➢ Communicating and understanding	General discussion, Demonstration, ***Assessment:*** ➢ Assignment ➢ Worksheets ➢ Preparation of notes	1. Identifies the merits of modular programming in problem solving.
• Console functions for character I/O • Stream functions for I/O operations • String functions • Mathematical functions • Character functions ✓ Communicating ✓ Understanding ✓ Problem Solving	General Discussion Demonstration Illustration Assignment Seminar ***Assessment:*** ➢ Worksheets ➢ Preparation of notes ➢ Problem Solving ➢ Output prediction ➢ Error correction ➢ Lab work	2. Classifies various input output functions for character and string data. 3. Compares character input functions. 4. Uses appropriate character and string functions for I/O operations. 5. Applies mathematical functions for solving problems. 6. Uses string functions for the manipulation of string data. 7. Manipulates character data with predefined character functions.
• User defined functions • Prototype of functions • Arguments of functions • Methods of calling functions ✓ Communicating ✓ Understanding ✓ ICT Skill ✓ Problem Solving	General Discussion, Demonstration, Illustration, Assignment ***Assessment:*** ➢ Preparation of notes ➢ Problem solving ➢ Output prediction ➢ Error correction ➢ Lab work	8. Implements modular programming by creating functions. 9. Identifies the role of arguments and compares different methods of calling.

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
• Scope and life-time of variables and functions ✓ Communicating ✓ Understanding ✓ ICT skill ✓ Problem solving ✓ Analysing	General Discussion, Demonstration, Illustration, ***Assessment:*** ➢ Problem solving, ➢ Lab work	10. Recognises the scope and life-time of variables and functions in a program.

Process Assessment

- Group discussions on arrays.
- Demonstration of sorting and searching by students.
- Lab work on sorting, searching, matrix operations.

Portfolio Assessment

- Activity log book
- Assignment
- Seminar report
- Assessment worksheets
- Practical Log Book

Unit Assessment

- Class test
- Quiz
- Question preparation

Towards the Unit:

Concept of modular programming

(1 Period)

Suggested activity: Discussion and preparation of notes

- Initiate a general discussion by asking the students the following questions.

- How can we manage a program when the number of lines of code is large in number?
- What can we do when some portion of code in one program is to be reused in other programs?
- How can we start the development of different parts of the program in parallel.

- Point out the difficulties and their solutions.
- Consolidate the discussion stressing the need for function.

Predefined functions

(1 Period)

Suggested activity: Seminar and preparation of notes

- The teacher divides the students into 5 groups and each group is given the task of presenting a seminar on predefined functions.
- Each group has to prepare a presentation on the group of functions assigned to them.
- The seminar should
  - List the various built in functions.
  - Explain the use of each function with examples.
  - Classify them according to their behaviour.
  - Specify the header file to use each of these functions.
  - All the students are required to prepare a note on the seminar.
- The students in the other groups can clear their doubts after the seminar. The teacher can also support the presenter with additional information, if needed.
- This activity ensures the involvement of each student in the group in the activity, and a facility for teachers to evaluate the involvement of each student in the group for process assessment.
- The teacher concludes the seminar pointing to the advantage of using predefined functions.
- Each student in a group has to submit the seminar report for the portfolio.

User-defined functions

(2 Periods)

Suggested activity: Discussion and preparation of notes

- Teacher provides the students with a sample program consisting of 25 or more lines of code to perform three process (for example, inputting few values, processing them, outputting the result).
- The teacher ask the learners to
  - o Divide the activities in the given program code by drawing lines in between.
  - o Give each activity a suitable name.
  - o Illustrate how each segmenmt of the code interacts with the other and paases value from one segment to another.
- The teacher introduces function and explains the various methods of writing functions.

TE Questions

1. *LO: 3.1* *Type: Short answer* *Score: 3*

   List the merits and demerits of modular programming.

   PS: CA

   SI : Any 2 advantages and 1 disadvantage

   Merits - Reduce size, Less errors, Simple, re-usability

   Demerits - Breaking down difficult, hierarchy setting

2. *LO: 3.3* *Type: Objective* *Score: 1*

   _____ function can read both character data and string data.

   PS: CA

   SI : `get()`

3. *LO: 3.8* *Type: Objective* *Score: 1*

   Choose the correct answer from the following to fill in the statement:
   A function returns _____ values.

   a. zero b. one c. any number of d. zero or one

   PS: CA

   SI : d

4. *LO: 3.9* *Type: Short answer* *Score: 2*

Write down the prototype of a function that can find the sum of 2 or 3 numbers as per the requirement.

PS: CG

SI : `int sum(int a, int b, int c=0);`

5. *LO: 3.4* *Type: Short answer* *Score: 2*

The functions `get()` and `gets()` are used to read strings from keyboard. How do they differ in the usage?

PS: CA

SI : `get()` requires a character array and number of characters as the arguments and the identifier cin and dot operator for its access.

`gets()` function needs only the array name as the arguement.

6. *LO: 3.5, 3.6, 3.7* *Type: objective* *Score: 3*

Match the following (Assume that the string variable **s1** and **s2** contain "computer")

1. `sqrt(25)`	a. A
2. `strlen(s1)`	b. False
3. `strcmp(s1,s2)`	c. 49
4. `pow(7,2)`	d. 8
5. `isupper('a')`	e. 5
6. `toupper('a')`	f. 0

PS: CG

SI: 1 - e 2 - d 3 - f 4 - c 5 - b 6 - a

7. *LO: 3.8* *Type: Short answer* *Score: 3*

Define a function that takes two parameters of type float and returns **true** (1) if the first parameter is greater than the second and otherwise returns **false** (0).

PS: CG

SI : Correctness in syntax, logic, return type and parameter type.

8. *LO: 3.9* *Type: Short answer* *Score: 2*

How do we pass data to a function for processing? How is a value passed by a function to its calling function?

PS: CA

SI : Parameters, Return value

9. *LO: 3.9* *Type: Short answer* *Score: 2*

What does the following function do?

```
void example(int n)
{
    int i;
    for (i=0; i<n; i++)
         cout << '*';
}
```

PS: CG

SI : Prints the character * (asterisk) n times

10. *LO: 3.9* *Type: Short answer* *Score: 3*

Write a function to draw a line consisting of underscores. The number of underscores is to be passed as a parameter to the function.

PS: CG

SI : Correctness in syntax, logic, return type and parameter.

11. *LO: 3.9* *Type: Short answer* *Score: 3*

Mark the following statements as true or false:

a. To use a predefined function in a program, we need to know only the name of the function.

b. A function returns a maximum of only one value.

c. Parameters allow us to use different values each time the function is called.

d. When a `return` statement is executed in a user-defined function, the function immediately terminates its execution.

e. A function returns only integer values.

f. Arguments are compulsory for a function.

PS: CA

SI : a - false b - true c - true d - true e - false f - false

12. *LO: 3.9* *Type: Short answer* *Score: 2*

Observe the following function prototypes. Identify the invalid, and explain why.

a. `one(int a, int b);`

b. `int thisone(char x);`

c. `char another(int a, b);`

d. `double yetanother();`

PS: CA

SI : a - return type is not specified

c - data type for the second parameter is not given

13. *LO: 3.9* *Type: Short answer* *Score: 3*

Consider the following statements:

```
double num1=5.1, num2=6.2, num3=3.3;
int int1=4, int2=7, int3=8;
int value;
double sum(double a, double b, double c)
{
      return(a+b+c);
}
```

Some of the following statements are valid, whereas some others are invalid. If valid, find the output. If invalid, give reason.

a. `value = sum(num1, 15.0, num3);`

b. `cout << sum(num1, num3, num2);`

c. `cout << sum(6.0, 8.0, 10.5);`

d. `cout << sum(num1, num3);`

e. `value = sum(num1, int2, num3);`

f. `value = sum(int2, int2, 10);`

PS: CG

SI : a - Valid. 23 will be stored in value

b - Valid. 14.6 will be displayed

c - Valid. 24.5 will be displayed

d - Invalid. One argument is missing

e - Valid. 15 will be stored in value

f - Valid. 24 will be stored in value

14. *LO: 3.6* *Type: Short answer* *Score: 3*

What will be the outputs of the following functions?

(a) `strcmp("COMPUTER", "computer")`

(b) `strcmpi("COMPUTER", "computer")`

PS: CA

SI : (a) - False (b) True

15. *LO: 3.9* *Type: Short answer* *Score: 3*

Consider the following function:

```
int secret(int x)
{
   int i, j;
   i = 2 * x;
   if(i > 10)
        j = x/2;
   else
        j = x/3;
   return j-1;
}
```

What is the output of each of the following program segments?

a. `x = 10; cout << secret(x);`

b. `cout << secret(5/2);`

c. `x = 10; k = secret(x); cout << secret(k);`

PS: CG

SI : a. 9 b. 0 c. 8

16. *LO: 3.9* *Type: Short answer* *Score: 3*

Consider the following function:

```
int secret(int one)
{
   int i;
   int prod = 1;
   for(i = 1; i <= 3; i++)
        prod = prod * one;
   return prod;
}
```

a. What is the output of the following C++ statements?

(i) `cout<< secret(5) <<endl;`

(ii) `cout<< 2 * secret(6) <<endl;`

b. What is the task assigned to the function `secret()`?

PS: CG

SI : a. (i) - 125; (ii) - 432 b. returns the cube of a number

17. *LO: 3.9* *Type: Short answer* *Score: 3*

Observe the following function prototypes:

```
int fun(int);
int fun(int &);
```

a. How do these functions differ in the method of calling?

b. Write sample statements to call these functions.

PS: CG

SI: a. Call by value and call by reference methods.

b. `cout << fun(5); int a=5; cout<<fun(a);`

18. *LO: 3.6* *Type: Objective* *Score: 3*

What will be the output of the following function calls?

a. `toupper('A')` b. `isdigit('9')` c. `isupper('A')`

PS: CG

SI : a. 65 (ASCII value of 'A') b. 1 (True) c. 1 (True)

19. *LO: 3.5, 3.6, 3.7* *Type: Objective* *Score: 3*

Identify the best match from columns B and C for each item in column A.

A	B	C
`pow(3,2)`	97	cstdio
`tolower('A')`	5	cmath
`strlen("hello")`	9	cctype
	6	cstring

PS: CA

SI :
```
pow(3,2) - 9 - cmath
tolower('A') - 97 - cctype
strlen("hello") - 5 - cstring
```

4 Web Technology

Introduction

Nowadays, Internet has emerged as a part of life. With the emergence of smart devices such as phones and tablet PCs Internet is going to have more roles in the future. In this chapter, we introduce web technology in general and HTML, the language of the web. Since the students are familiar with Internet, it will be easy for them to get accustomed to this subject.

A general idea about web technology is given to the students. Some common terminologies such as web server and DNS servers are discussed. Advantages of dynamic webpages over static webpages are stressed. Role of scripting languages in creating dynamic webpage is discussed. Server side and client side scripting languages are compared and some appropriate examples are mentioned.

After the introduction of web technology, HTML is introduced. Basic tags and attributes are demonstrated with the help of lab sessions. After the completion of this chapter, students should gain confidence to create a simple webpage using HTML. This chapter should create a strong foundation for the advanced web programming which will be discussed in the coming chapters.

Values and Attitudes

- ✓ Motivation to create and host web sites and become a part of large world community.
- ✓ Make accessing/sharing information easy to anyone from anywhere.
- ✓ Give everyone same web content, irrespective of the size and quality of the device they use.

Unit Frame

Periods: 25

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Importance of secure communication over Internet. ✓ Identifying ✓ Explaining	General discussion. ***Assessment:*** ➢ Preparation of notes	1. Explains the need of secure communications
Web server and web hosting ✓ Identifying ✓ Observing	General discussion with the help of Internet. ***Assessment:*** ➢ Preparation of notes	2. Describes web server and web hosting
Static and dynamic web pages ✓ Identifying ✓ Observing ✓ Explaining	Demonstration of different types of web pages-static and dynamic ***Assessment:*** ➢ Preparation of notes ➢ Lab work	3. Differentiates static and dynamic web pages.
Programming languages and scripts ✓ Identifying ✓ Comparing	General discussion with the help of slide presentation. ***Assessment:*** ➢ Preparation of notes ➢ Lab work	4. Identifies the difference between programming languages and scripts
Different types of scripting languages ✓ Identifying ✓ Comparing	Group discussion and consolidation. ***Assessment:*** ➢ Preparation of notes ➢ Lab work	5. Explains different types of scripting languages. 6. Compares different types of scripting languages.
Basic HTML elements ✓ Identifying ✓ Observing ✓ Explaining	Demonstration of basic HTML tags with the help of computer. ***Assessment:*** ➢ Preparation of notes ➢ Lab work	7. Identifies the basic HTML tags. 8. Lists fundamental HTML tags and attributes.

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
List and classify HTML tags ✓ Identifying ✓ Comparing	General discussion and comparing of different tags and attributes. ***Assessment:*** ➢ Preparation of notes ➢ Lab work ➢ Worksheet 4.1	9. Classifies HTML tags
Formatting tags ✓ Identifying ✓ Observing ✓ Classifying	General discussion followed by a group work. ***Assessment:*** ➢ Preparation of notes ➢ Lab work ➢ Worksheet 4.2	10. Identifies the formatting tags and attributes. 11. Identifies the similarities and differences among formatting tags.
Other basic tags ✓ Identifying ✓ Observing	Demonstration with the help of computer. ***Assessment:*** ➢ Lab work	12. Uses <PRE> and <DIV> tags. 13. Tags for moving objects and contents in a document. 14. Uses <FONT> Tag. 15. Comments in HTML
Inserting images ✓ Observing ✓ Presenting	Discussion and demonstration of images. ***Assessment:*** ➢ Preparation of notes ➢ Lab work	16. Inserts images into html documents.

Process Assessment

- Involvement in the discussions, Lab work

Portfolio Assessment

- Activity log book, Practical log book, HTML documents
- Assessment worksheets.

Unit based Assessment

- Class test.

Towards the Unit

Formatting tags

(1 Period)

Suggested activities: General discussion followed by group work.

- Teacher selects a paragraph which contains various formatting like bold, underline, italics etc.
- It is shown using a projector or a computer.
- Teacher asks students to identify the formatting used in the paragraph.
- Students respond with random answers.
- Teacher notes down the responses one by one on the backboard.
- After noting the responses, teacher introduces formatting tags in <HTML> like <B>, <I>, <U> etc. one by one.
- After explaining each tag, teacher asks the students to format the above given paragraph with the help of appropriate tags.
- Each student attempts it in a workbook.
- Teacher randomly verifies some workbooks and makes necessary corrections if any.
- Ask every student to do it in the lab.

TE Questions

1. *LO: 4.1* *Type: Short answer* *Score: 3*

   Expand SSL? What it does?

   PS: CG

   SI : Secure Sockets Layer. It provides a standard security technology for establishing an encrypted connection between computers on Internet.

2. *LO: 4.1* *Type: Objective* *Score: 1*

   "In order to communicate on the web, computers / devices need to understand each other. This is made possible by making all devices follow the same protocol". Name the protocol used here.

PS: CG

SI : Transmission Control Protocol/Internet Protocol (TCP/IP)

3. *LO: 4.2* *Type: Short answer* *Score: 3*

"To ensure faster Internet connectivity and redundant power supply, a web server is usually installed in a data center." List the requirement of a Data Center?

PS: CG

SI : A data center requires extensive backup power supply systems, cooling systems, high speed networking connections and security systems.

4. *LO: 4.2* *Type: Objective* *Score: 2*

Match the following.

Port No.	Service
80	SMTP
443	HTTP
25	HTTPS
20	FTP

PS: CG

SI : 80-HTTP, 443-HTTPS, 25-HTTPS, 20-FTP

5. *LO: 4.3* *Type: Objective* *Score: 1*

A website created for airline ticket reservation is of _____ type (Static/Dynamic)

PS: CG

SI : Dynamic

6. *LO: 4. 4* *Type: Objective* *Score: 1*

To embed script within HTML document _____ tag is used.

PS: CG

SI : <SCRIPT>

7. *LO: 4.5* *Type: Short answer* *Score: 3*

Compare client side scripting and server side scripting. Give an example for each scripting language.

PS: CG

SI : Client side scripting is executed on the client browser; it provides a quicker response to users. In server side scripting, scripts are executed in the server.

8. *LO: 4.5* *Type: Objective* *Score: 1*

Select the wrong statement about JavaScript.

1. It is a Client side scripting Language

2. Any text editer can be used to write Java Scipt.

3. It can have the extention .js

4. It was developed by Microsoft.

PS: CG

SI : 4. It was developed by Microsoft.

9. *LO:4. 5* *Type: Objective* *Score: 1*

Expand AJAX.

PS: CA

SI : Asynchronous JavaScript and Extensible Markup Language.

10. *LO:4.5* *Type: Short answer* *Score: 4*

"It is possible to update parts of a webpage, without reloading the entire webpage". Name the technology used here. Write a short note on it.

PS: CA

SI : Ajax

11. *LO: 4.5* *Type: Short answer* *Score: 3*

"ASP and JSP are server side scripting languages". Mention any three differences between them.

PS: CG

SI : ASP uses Internet Information Server (IIS). JSP uses, Apache

Tomcat web server. ASP files have the extension .asp where as JSP has .jsp as extension. ASP was released by Microsoft while JSP was developed by Sun Microsystems.

12. *LO: 4.6* *Type: Objective* *Score: 2*

Match the following:

Ajax	a. A server side scripting environment developed by Microsoft.
CSS	b. Helps in updating portions of a web page instead of the entire web page.
ASP	c. Open source general purpose scripting language.
PHP	d. Style sheet language and formatting.

PS: CG

SI : Ajax -b, CSS-d, ASP-a, PHP-c

13. *LO: 4.7* *Type: Objective* *Score: 1*

State true or false.

"HTML is a case sensitive language".

PS: CG

SI : False

14. *LO: 4.18* *Type: Objective* *Score: 2*

Rearrange the following tags into similar groups.

Empty Tag	Container Tag
<HR>	
<P>	<HTML>
<H1>	<IMG>
<TITLE>	<HEAD>

PS: CG

SI : Empty: <HR>,
, <IMG> (empty)

Container: <HTML>, <HEAD>, < TITLE>, <H1>, <P>

15. *LO: 4. 8* *Type: Essay* *Score: 5*

Differentiate between tags and attributes? Identify the tags, attributes and the values from the following HTML code.

```
<HTML>
   <HEAD>
      <TITLE> SAMPLE CODE</TITLE>
   </HEAD>
   <BODY Background="flower.jpg" Text= "yellow">
      What a beautiful day!!
   </BODY>
</HTML>
```

PS : CA

SI : Both Definitions

Tags: `<HTML>, <HEAD>, <TITLE>, <BODY>`

Attribute: `Background, Text`

Values: `flower.jpg, yellow`

16. *LO: 4.8* *Type: Short answer* *Score: 3*

Consider the following code:

```
<HTML>
   <HEAD>
      <TITLE> our school web site</TITLE>
   </HEAD>
   <BODY background="school.jpg">
      Hello, Welcome to our home page!
   </BODY>
</HTML>
```

a. Name any three container tags given in the code.

b. What will be the background of this webpage?

c. What will be the content shown in the browser?

d. Give the code to replace the current background with red colour.

PS: CA

SI : a. <HTML>, <HEAD>, <BODY>,

b. Image named school.jpg

c. Hello, Welcome to our home page!

d. <BODY Bgcolor = "red">

17. *LO.4.8* *Type: Objective* *Score: 2*

Match the following:

Colour	Colour HEX
RED	#FFFFFF
GREEN	#0000FF
BLUE	#FF0000
WHITE	#00FF00

PS: CA

SI : RED-#FF0000, GREEN-#00FF00, BLUE-#0000FF, WHITE-#FFFFFF

18. *LO: 4.8* *Type: Short answer* *Score: 3*

Mr. Sahaf is not used to the Internet. When he moved the curser through the text he noticed colour change in some text. When he clicked one of such texts it changed to a new colour and a new page came in. Explain the reason.

PS: CG

SI : concept of link

19. *LO: 4.9* *Type: Objective* *Score: 4*

Observe the following web page:

a. There are three headings. The tags used are <H1>,<H4> and <H6>. Guess the corresponding tags for each heading.

b. Name the common attribute used by all the heading tags mentioned above.

c. Give the value of attributes of each heading tag.

PS: CA

SI : a. 1- H1, 2-H4, 3-H6

b. Align

c. `H1 Align = "left", H4 Align = "center" H6 Align = "right"`

20. *LO: 4.10* *Type: Objective* *Score: 2*

Name the tag used to achieve the following:

a. To make a sentence in bold face.

b. To make font size bigger.

c. To underline a sentence.

d. to center the contents in a webpage.

PS: CA

SI: `<B>, <BIG>, <U>, <CENTER>`

21. *LO: 4. 10* *Type: Objective* *Score: 2*

`<STRIKE>` tag displays the text in strike through style. It can be substituted with _____ tag to get the same result.

PS: CA

SI : `<S>`

22. *LO: 4.11* *Type: Short answer* *Score: 3*

We often use quotation. HTML has two ways to represent quotations. Name the tags used for quotations. Explain the difference between these two tags?

PS: CA and CG

SI : `<BLOCKQUOTE>` and <Q> tags. <Q> tag encloses text in quotation with an indent. This tag is used for short quotations, whereas long quotations use `<BLOCKQUOTE>` tag.

23. *LO: 4.13* *Type: Objective* *Score: 4*

Tom wants to display a scrolling text in the web page with the following condition:

a. Text height should be 10% of the window.

b. It should scroll in the right direction.

c. There should be a gap of 10 seconds between each scroll of the text.

d. It should scroll continuously.

Name the HTML tag, its attributes and values used to achieve the above conditions.

PS: CA

SI : <MARQUEE>, attributes Height= "10%", Direction=" right", Scrolldelay = 10 Loop = INFINITE.

Assessment Worksheet 4.1

1. Say true or false:

   "<HTML>, <html>, <Html>, <HtmL> etc. have the same meaning"

2. Pick the odd one out:

, <HR>, <IMG>, <HEAD>

3. Identify tag, attribute, value from the code <HTML Lang = "El">.

4. <IMG> is a/an _____ tag (container/empty).

5. The closing tag is similar to opening tag, but has an additional character after the first angle bracket. Name the character.

Assessment Worksheet 4.2

1. Name the tag which indicates to the browser that the enclosed text is preformatted and should not be reformatted again.

2. Predict the output of H₂SO₄

3. Say true or false:

   The effect of using <EM> tag is the same as that of <I> tag.

4. What is the use of <ADDRESS> tag?

5. Give any two attributes of <HR> tag.

5 Web Designing using HTML

Introduction

In the previous chapter, students are introduced to the basic tags of HTML. In this chapter we are continuing from the basic and introducing advanced features in HTML. Lists and their types are introduced first. Then creating Tables, Frames, and Forms are introduced one by one. Each of the concepts is discussed with their corresponding tags and their important attributes.

Teachers should try to demonstrate concepts with maximum sample codes. The learners should get a concrete idea on the subject, so that in the following chapters, where learners are introduced to advanced web technologies, they should feel at ease with HTML. Lab works are to be supplemented whereever necessary.

Values and Attitudes

- ✓ Sharing and caring through collaboration and co-operation.
- ✓ Motivation to create web pages and to become part of a large world community.
- ✓ Inspired to access information with ease from anywhere.

Unit Frame

Periods: 20

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Lists in HTML ✓ Understanding ✓ Identifying ✓ Classifying ✓ Comparing ✓ Charting	General discussion on different types of lists found in real life. ***Assessment:*** ➢ Program code ➢ Preparation of notes ➢ Lab work ➢ Worksheet 5.1	1. Distinguishes various types of lists available in HTML
Linking the web pages ✓ Understanding ✓ Observing	General discussion by demonstrating the internal and external linking. ***Assessment:*** ➢ Program code ➢ Lab work	2. Links various web pages and sections within a webpage
Embedding audio and video in web pages ✓ Analyzing ✓ Communicating ✓ Understanding	Slide presentation and discussion on embedding multimedia ***Assessment:*** ➢ Program code	3. Embeds various audio, and video files in a web page
Producing inline sounds and video in web page ✓ Identifying ✓ Presenting	Discussion and demonstration of inline sound and video. ***Assessment:*** ➢ Program code ➢ Lab work	4. Embeds inline audio video
Tags and attributes of TABLE ✓ Observing ✓ Identifying ✓ Communicating	General discussion on the use of tables in presenting data, and on tags, and attributes of tables. ***Assessment:*** ➢ Preparation of notes. ➢ Worksheet 5.2	5. Lists various tags and attributes in creating a table
Associated tags of TABLE tag ✓ Comparing ✓ Communicating ✓ Inferring	General discussion and comparison on different tags used in creating TABLE ***Assessment:*** ➢ Program code	6. Compares tags such as TD, TH and their attributes and uses

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Construction of TABLES using tags ✓ Observing ✓ Predicting	Demonstration of TABLE creation. ***Assessment:*** ➢ Program code ➢ Output prediction ➢ Error correction	8. Illustrates the creation of Table
FRAMES in HTML ✓ Observing ✓ Identifying	Slide presentation on creating FRAMES and FRAMESETS. ***Assessment:*** ➢ Program code ➢ Error correction ➢ Assessment Worksheet 5.3	9. Illustrates the use of frames and framesets.
Creating frames using appropriate tags ✓ Observing ✓ Identifying	Discussion on the tags and attributes of FRAMES. ***Assessment:*** ➢ Program code	10. Creates frames
FORMS in web page ✓ Observing ✓ Identifying ✓ Communicating	General discussion on the use of FORM. ***Assessment:*** ➢ Activity log ➢ Note preparation	11. Explains the use of forms in HTML.
Various components in FORMS ✓ Identifying ✓ Charting ✓ Applying	Discussion on various components in Form with the help of slide presentation. ***Assessment:*** ➢ Activity log	12. Lists the use of forms in html and its components.
Design of web pages with the above discussed features ✓ Identifying ✓ Applying	Demonstration of web page designing. ***Assessment:*** ➢ Program code	13. Creates a web page with all the features discussed so far

Process Assessment

- Group discussions,
- Demonstration of varoius tags and attributes.
- Lab work.

Portfolio Assessment

- Activity log book
- Assessment worksheets
- Practical Log Book

Unit Assessment

- Class test

Towards the Unit:

Creation of TABLE

(1 Period)

Suggested activities: Demonstration and discussion

- Teacher shows a table with appropriate data on the black board/ using projector. While selecting the table, try to include a table with rowspan and/or colspan features.
    - o Start HTML coding.
    - o Show its effect simultaneously on any browser.
    - o Ask suggestion from randomly selected students on the next tags and attributes.
    - o Show the difference in the table when each new tag is introduced.
    - o Show the final table and conclude by explaining the result.
    - o Ask each student to draw a table and attempt to write the code for the same.

Various components in FORMS

(1 period)

Suggested activities: Slide presentation and discussion

- Teacher asks the students how they came to know their SSLC result.
    - o Students respond that they used the Internet.

- Teacher asks the step-by-step procedure to get the mark list.
- Students explain it.

- Teacher introduces the concept of form.
- Once again teacher asks them how they applied for Class XI admission.
  - Students describe the single window online application process.
  - Teacher asks a few students about the different types of data they entered.
  - Students name a few.
  - Teacher identifies this with various components available in FORM.
- Teacher consolidates the discussion leading to different components of form with the help of slide presentation which shows various components in FORMs.

TE Questions

1. LO 5.1 Type : Essay Score: 5

Write an HTML code for creating the following web page XYZ PVT LTD, New Delhi.

1. Health care
   - Shampoo
   - Hair oil
2. Baby products
   a. Baby soap
   b. Dress
   c. Toys
3. Men's wear
   - Casuals
   - Formals

PS: CG

SI : Code for the web page

2. *LO 5.2* *Type : Objective* *Score: 1*

_____ tag provides hyperlinks in HTML.

PS: CA

SI : <A>

3. LO 5.3 *Type :* Objective *Score: 1*

Attribute of <EMBED> tag which specifies the URL of the audio or video files to be included is _____.

a. Noembed b. Src c. Alt d. Main

PS: CA

SI : Src

4. *LO 5.4* *Type : Objective* *Score: 1*

_____ tag helps in playing audio in the background while a page is viewed.

PS: CA

SI : <BGSOUND>

5. *LO 5.5* *Type : Objective* *Score: 1*

Adil wants to change the thickness of the border line of a table in his web page. Which attribute of <TABLE> tag can be used for this?

PS: CA

SI : Border

6. *LO 5.6* *Type : Short answer* *Score: 3*

Write the HTML code to create the following table.

SUBJECT		**MARK**
SCIENCE	Maths	45
	Chemistry	42

PS: CG

SI : Correct tags and attributes

7 *LO 5.8* *Type : Short answer* *Score: 3*

Shabilesh is creating a web page. Help him to write the HTML code to divide the window horizontally in the ratio 35: 65.

Processing skill category CG

Scoring indicator: Write code for creating frameset

8. LO 5.11 Type : Short answer Score: 3

Write HTML code to create the following.

User ID		Submit
Password		
District		Reset

PS: CG

SI : Code

9. LO 5.7 Type : Essay Score: 6

Write HTML code to create the following table.

No. of Students		
Science		Commerce
Biology	Computer Science	
56	57	60

Processing skill category CG

Scoring indicator : Code

10. LO 5.6 Type : Essay Score: 3

Predict the output

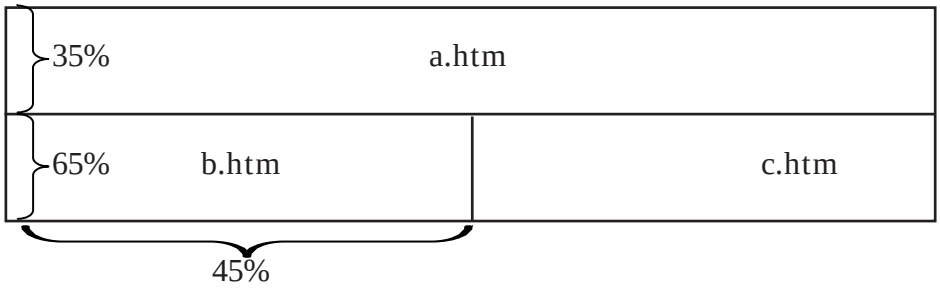
```
<TABLE>
  <TR>
        <TH>1</TH>
        <TH>2</TH>
  </TR>
  <TR>
        <TD>3</TD>
        <TD>4</TD>
  </TR>
  <TR>
        <TD>6</TD>
        <TD>7</TD>
  </TR>
</TABLE>
```

PS: CG

SI : Correct output.

11. LO 5.9. *Type : Short answer* *Score: 4*

Write the code to divide a browser window into three parts as follows.



PS: CG

SI : HTML code for frameset

12. LO 5.11 *Type : Short answer* *Score: 4*

Name two Form submission methods. Compare the two methods.

PS: CA

SI : `Post` and `Get`

13. LO 5.9 *Type : Short answer* *Score: 2*

Match the following:

Frame	Cellspacing
Table	Rows
TR	Align
Frameset	Src

PS: CA

SI : correct match ½ mark each

14. LO 5.3 *Type : Short answer* *Score: 1*

What is the use of <EMBED> Tag?

PS: CA

SI : To include audio-video files.

15. LO 5.2 Type : Short answer Score: 6

What are the different types of links available in HTML? Explain in detail.

PS: CA

SI : Three types, ordered, unordered, definition lists

16. LO 5.10 Type : Short answer Score: 2

Write HTML code for including options to select gender (Male or Female). How do you mark one of the items in the select list as default?

PS: CG

SI : input type radio, value

Project

A simple website for your school

Now you are familiar with HTML. You can try to create a website for your school. It should contain at least 5 web pages including home page. Home page should give details regarding school and links to all other pages. Each and every page should have link back to the home page and if necessary to other pages and sections.

The other pages should include one for academic details. Another web page for sports and games and one for extracurricular activities. Another page should be there for announcement and notice such as scholarships for students.

Make sure that each web page is made attractive with necessary features including multimedia, frames, forms, tables etc.

Assessment Worksheet 5.1

1. Unordered lists are also called _____.
2. What is the default value of Type attribute?
3. How can we start an ordered list which starts numbering from 9?
4. What is the difference between Start and Type attribute?
5. <DD> and <DT> tags are used for.

   a) Unordered list b) Sorted list c) Ordered list d) Definition list

Assessment Worksheet 5.2

1. What is the full form of URL?
2. _____ tag is used for creating links.
3. The main attribute of <A> tag is _____.
4. A link to another section of the same webpage is called _____.
5. Say true or false.

   We can give hyperlinks to images.

Assessment Worksheet 5.3

1. In HTML, _____ is used to divide a window into two or more different sections.
2. Pick the odd one out.

   a) Start b) Rows c) Border d) Cols
3. Say true or false.

   Frameset is an empty tag.
4. Give any three attributes of Frame tag.
5. What is the use of <NOFRAME> tag?

6 Client Side Scripting using Javascript

Introduction

This chapter introduces JavaScript as the client-side scripting language. JavaScript is the most popular scripting language used at the client side. We can hardly find a web page that does not use JavaScript. Scripting language is the only way to include program element in a web page. While introducing this chapter in the class, ensure that the learners are clear about the importance and use of scripting language in a web page. One of the advantages of teaching JavaScript is that its syntax is very much similar to C++. Hence it is not difficult to transact the content of this chapter. Most of the sections in this chapter can be considered as a revision of C++ chapters. We don't need to use any special software to use JavaScript in a web page. We can use any text editor to create a web page containing JavaScript. In the previous chapters we have used the editor Geany to create web pages. Hence, we can use the same editor, Geany, to learn JavaScript also. JavaScript provides a large number of built-in functions for the programmers. Some of the JavaScript functions use mixed cases in their name (for example toUpperCase()). Since JavaScript is case sensitive, we must be careful in using proper cases for the function names. If we use Geany as the editor, it will display the keywords in blue colour. i.e. if we use the correct name for a function, it will be displayed in blue color. This will help us to identify, whether the entered function name is correct or not. For the effective transaction of the content in this chapter, the teacher may use the demonstration method. The children must be given enough lab hours to practice the concept learned in this chapter.

Values and Attitudes

- ✓ Appreciates the facilities provided by the JavaScript to create web pages.
- ✓ Develops the quality of systematic arrangements.
- ✓ Enhances logical reasoning.

Unit Frame

Periods: 25

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Client side and server side scripting language ✓ Observing ✓ Identifying ✓ Understanding	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes	1. Distinguishes the use of client side and sever side scripting language.
The importance of using client side scripting language ✓ Observing ✓ Identifying ✓ Understanding	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes	2. Explains the need of client side scripting language.
Importance of JavaScript as the client side scripting language ✓ Observing ✓ Identifying ✓ Understanding	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes	3. Identifies the importance of JavaScript as the client side scripting language.
Creating user-defined functions in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab work	4. Uses JavaScript functions in a web page.
Data types in JavaScript ✓ Observing ✓ Identifying ✓ Understanding	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes	5. Explains different data types in JavaScript.
Use variables in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab Work	6. Uses correct variables in JavaScript.

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Control Structures in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab Work	7. Uses appropriate control structures in program codes.
Built-in functions in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab Work	8. Uses appropriate built-in functions in JavaScript.
Use document elements in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab Work	9. Explains the method to access document elements using JavaScript.
Use text box and combo box in JavaScript ✓ Observing ✓ Identifying ✓ Understanding ✓ Experimenting	Demonstration and Discussion ***Assessment:*** ➢ Worksheet ➢ Preparation of notes ➢ Lab Work	10. Creates JavaScript functions that handle values in text boxes and combo boxes.

Process Assessment

- Involvement in the discussions.
- Lab work.

Portfolio Assessment

- Activity log book, Practical log book.
- HTML documents prepared in the lab.
- Assessment worksheets.

Unit based Assessment

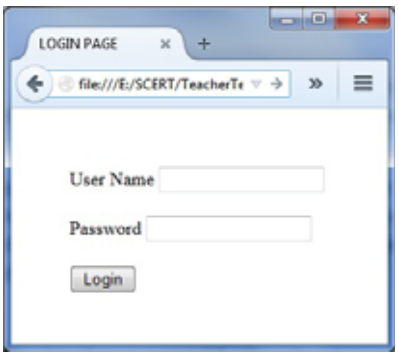
- Class test.
- Quiz on various data types and built-in functions in JavaScript.

Towards the Unit:

The need of scripting language

(1 Period)

Suggested activity: Demonstration and discussion



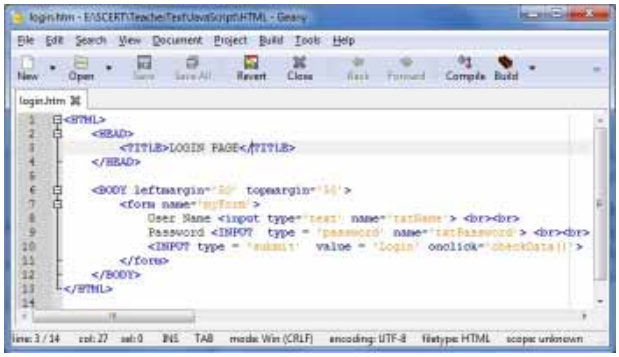
The teacher opens a web page containing username and password entry as shown in the following figure.

The teacher initiates the discussion among the students by asking the following questions.

You must have seen various websites for accepting userName and password as shown in the above page. What will happen to those pages, if you click the login button without entering the userName or password?

The teacher collects various responses. The responses can be concluded as "the web page displays a message telling the user to enter the username or password, whichever is missing in the page".

Now, the teacher can ask another question: How do we make this possible in the above web page? The teacher can open the code of the above web page as shown below.



Tell the students to make necessary modifications in the above code. Let the children think and discuss among themselves. Finally they will reach a conclusion that it is not possible for them to achieve the same using the knowledge gained so far.

The teacher can modify the above program code as shown below and open the web page in a browser. Let children observe that the web page displays a message directing the user to enter user name if it is not given. Even though children won't understand the meaning of the code entered in the HTML file, first of all, let them understand that it is possible to

achieve it with a few lines of program code. Tell them that they will learn each and every minute detail of the HTML code in a short while.

Tell the students to observe the newly added portion in the above code. Let them note down and discuss the familiar items in the program code. The teacher can consolidate that most of the items in the newly added code is the same as in C++.

```
<HTML>
    <HEAD>
        <TITLE>LOGIN PAGE</TITLE>

        <SCRIPT language = 'JavaScript'>
            function checkData()
            {   var x;
                x = document.myForm.txtName.value;
                if (x == "")
                {
                    window.alert("Please enter username ....");
                }
            }
        </SCRIPT>

    </HEAD>

    <BODY leftmargin='50' topmargin='50'>
        <form name='myForm'>
            User Name <input type='text' name='txtName'> <br><br>
            Password <INPUT  type = 'password' name='txtPassword'> <br><br>
            <INPUT type = 'submit'  value = 'Login' onclick='checkData()'>
        </form>
    </BODY>
</HTML>
```

TE Questions

1. *L.O : 6.1.* *Type : Objective* *Score : 1*

   In the client side, a web designer can use either JavaScript or VBScript as the scripting language. Name the attribute of <SCRIPT> tag that can be used to specify the language.

   SI : Language PS: CA

2. *L.O : 6.4.* *Type : Objective & Short answer* *Score : 3*

   Can you use <SCRIPT> tag in a web page without using "language" attribute? Justify your answer.

   SI : Yes.

   If the language attribute is not used, the browser will consider JavaScript as the default value for this attribute. PS: CA

3. *L.O : 6.4.* *Type : Short answer* *Score : 3*

   Scripts can be embedded in HEAD section or BODY section of an HTML page. What difference do you feel in placing a script in these two sections? PS: CA

   SI : If the script is in the HEAD section, all the scripts will be loaded before the BODY section. Hence if a large volume of scripts are there in a web page, the page will be loaded slowly. But, if the script is placed in bottom of the BODY section, the script is loaded only after displaying all the page content in the browser window. Hence the user will feel that the page is loaded faster than in the previous case.

But, if the script is in the bottom of the BODY section and if the web page calls any script function on loading of the BODY section, the function will not work properly.

4. *L.O : 6.4.* *Type : Objective* *Score : 2*

State true or false.

a) Using script is the only way to include programming elements in an HTML page.

b) It is always necessary to use language attribute in a <SCRIPT> tag.

c) A script can be placed only in the HEAD section of an HTML page.

d) <SCRIPT> tag is an empty tag.

SI: a) Yes. b) No. c) No. d) No. PS: CA

5. *L.O : 6.3.* *Type : Objective* *Score : 1*

The browser uses _____ to execute the JavaScript code.

SI : JavaScript Engine PS: CA

6. *L.O : 6.4.* *Type : Objective* *Score : 1*

Like C++, _____ is used to denote the end of a JavaScript statement.

SI : Semicolon (;) PS: CA

7. *L.O : 6.8.* *Type : Short answer* *Score : 2*

Write the JavaScript statement to show the message, "This is JavaScript", on the screen in a separate window.

SI : `alert("This is JavaScript");` PS: CG

8. *L.O : 6.4.* *Type : Short answer* *Score : 2*

A web developer included the following code in his web page.

```
<HTML>
    <HEAD>
        <SCRIPT>
        function show()
        {   document.write("This is a function.");
        }
```

```
        </SCRIPT>
    </HEAD>
    <BODY>
        show();
    </BODY>
</HTML>
```

What will be the output of the above web page? PS: CA

SI : The above page will show "`This is a function.`" on the web page.

9. *L.O : 6.4.* *Type : Objective* *Score : 1*

_____ keyword is used to define functions in JavaScript.

SI : function PS: CA

10. *L.O : 6.8.* *Type : Objective* *Score : 1*

Which are the three basic data types in JavaScript?

SI : number, string, boolean PS: CA

11. *L.O : 6.5.* *Type : Objective* *Score : 4*

Classify the following data items in JavaScript. Give proper heading for each category.

false, 1.38, "true", 300, "welcome", 0.009, "function", 22, true, 0

SI : number : 1.38, 300, 0.009, 22,0

string : "true", "welcome", "function"

boolean : false, true PS: CG

12. *L.O : 6.6.* *Type : Objective* *Score : 1*

The keyword _____ is used to define any type of variable in JavaScript.

SI : `var` PS: CA

13. *L.O : 6.4.* *Type : Short answer* *Score : 2*

Following is a JavaScript function.

```
function show()
{ var x, y, z;
```

```
x = 10;
y = 20;
z = x > y;
window.alert(z);
}
```

What will be the output after executing the above function?

SI : It will show "false" in an alert window. PS: CA

14. *L.O : 6.6.* *Type : Short answer* *Score : 2*

Following is a code segment in JavaScript.

```
var m, n, sum;
m = "100";
n = "50";
sum = m + n;
```

On executing the above code, what will be the value of the variable sum? What modification can be made in the last line to get the value of the variable sum as 150?

SI : 10050 PS: CG

To get 150, the last statement can be modified as

```
sum = Number(m) + Number(n);
```

15. *L.O : 6.7.* *Type : Short answer* *Score : 4*

Following is an HTML page that contains a JavaScript code.

```
<HTML>
<BODY>
  <SCRIPT language = "JavaScript">
        var n, i, s = 0;
        for(i =1; i <= 10; i+=2)
        {
              s +=  i;
        }
        document.write(s);
  </SCRIPT>
</BODY>
</HTML>
```

a) What will be the output of the above web page?

b) What will happen if the statement *document.write(s);* is replaced by the statement *window.alert(s);*?

SI : a) The above page will display sum of odd numbers 1, 3, 5, 7 and 9 (i.e. 25) on the web page.

b) If `window.alert(s)` is used, it will display the result in a separate alert window. Otherwise, the result will be displayed on the web page itself. PS: CA

16. *L.O : 6.5 & 6.8.* *Type : Objective* *Score : 3*

Write the value of the variable z in each of the following cases?

```
a) x = 50;
   y = 7;
   z = x % y;
b) x = "100";
   y = "200";
   z = x + y;
c) z = isNaN("3.14");
d) z = toLowerCase("Welcome");
e) x = "Kerala";
   z = x.charAt(2);
f) x = "Kerala";
   z = x.length;
```

SI : a) 1

b) "100200"

c) True

d) "welcome"

e) "r"

f) 6 PS: CA

17. *L.O : 6.9.* *Type : Objective* *Score : 2*

The following web page shows a button on the web page. Fill in the blank so that the page will display a "Welcome..." message when the mouse is moved over the button.

```
<HTML>
<HEAD>
  <SCRIPT>
        function  fun1()
        {     window.alert("Welcome…");
        }
  </SCRIPT>
</HEAD>
<BODY>
  <INPUT  type  =  "submit"  ……  ……>
</BODY>
</HTML>
```

SI : `onMouseEnter = "fun1()"` PS: CA

18. *L.O : 6.10.* *Type : Short answer* *Score : 3*

List the advantages of using external JavaScript file.

SI : Any three valid points. PS: CA

19. *L.O : 6.10.* *Type : Objective* *Score : 1*

_____ is the extension of JavaScript file when it is saved as an external JavaScript file.

SI : ".js" PS: CA

Assessment Worksheet 6.1

1. State true or false
   a) Scripts allow the web developers to embed a piece of program code in the web pages.
   b) Scripts are used only at the client-side.
   c) JavaScript is the only Scripting Language used at the client side.
   d) JavaScript is supported by almost all web browsers in the world.
2. _____ tag is used to include scripts in an HTML page.
3. _____ is the attribute of `<SCRIPT>` tag to specify the language.

7 Web Hosting

Introduction

In the last two chapters students studied in detail how to create web pages. By now they can create a simple website. In this chapter they are introduced to the concepts of web server and webhosting. Starting with the different types of webhosting, learners are guided through the process of hosting a site. How to buy a web hoisting space, how to register a domain and what the importance of FTP client software are etc. are also discussed.

Since students are new to the field of webhosting, they are introduced to the free hosting facilities available. CMS (Content Management System) tools, which makes designing and maintaining web pages a simple task is also discussed. Most of the students are familiar with mobile phones and devices like tablet, PC, palmtop, etc. Designing web pages for such devices with diverse screen size and resolution is also stressed.

This chapter should provide an encouragement for every student to tryout something with web hosting. It should give a strong foundation for the learner to move to more sophisticated web tools. Necessary demonstration and hands-on session may be given to learners.

Values and Attitudes

- ✓ Motivation to create and host web sites and become a part of large world community.
- ✓ Inspired to access information with ease from anywhere.
- ✓ Give everyone same web content, irrespective of the size and quality of the device they use. Equality is stressed.

Unit Frame

Periods: 10

Concept/Idea and Process skills	Process/Activities with Assessments	Learning outcomes
Use of web server and concept of webhosting. ✓ Understanding ✓ Identifying	General discussion on web server and web hosting. ***Assessment:*** ➢ Preparation of notes	1. Describes the use of a web server and the concept of web hosting.
Types of web hosting ✓ Classifying ✓ Comparing	General discussion. ***Assessment:*** ➢ Preparation of notes	2. Classifies different types of hosting.
How to buy a hosting space. ✓ Analyzing ✓ Understanding	Demonstration with the help of Internet. ***Assessment:*** ➢ Worksheet 7.1	3. Explains the ways to buy hosting space.
Domain registration and hosting using FTP client software. ✓ Identifying ✓ Presenting	Demonstration and general discussion. ***Assessment:*** ➢ Notes preparation ➢ Lab work	4. Registers a domain and hosts a website using FTP client software.
Free hosting ✓ Observing ✓ Comparing ✓ Communicating	Demonstration of free hosting service providers with the help of Internet connection and projector. ***Assessment:*** ➢ Note preparation.	5. Explains the features of free hosting.
Content Management System ✓ Comparing ✓ Inferring	General discussion and comparison on Content Management System ***Assessment:*** ➢ Class quiz	6. Identifies the use of Content Management System.
Responsive web design. ✓ Observing ✓ Predicting	Demonstration of a responsive webpage on various types of devices. ***Assessment:*** ➢ Worksheet7.2 ➢ Notes preparation	7. Describes the need for responsive web design.

Process Assessment

- Involvement in the discussions.

Portfolio Assessment

- Activity log book.
- Assessment worksheets.

Unit based Assessment

- Class test.

Towards the Unit:

Responsive web design

(1 Period)

Suggested activities: Demonstration and discussion

- Demonstration of a responsive web page on various types of devices.
- Teacher asks the students to name a few devices which can be used to access internet.
    - o From a typical class room, students will come up with various names including smart phones, laptop, desktop and even smart TV.
    - o Teacher shows them a few devices like laptop, smart phone, tablet PC etc.
- Teacher connects these devices to the Internet.
- Once it is connected, teacher opens a non-responsive website and shows it in three devices simultaneously.
    - o Students notice the difference.
    - o Teacher explains the concept and further elaborates the difficulty in showing a conventional page (non responsive) in different devices with different sizes.
    - o Then introduces the concept of responsive web page as a solution to this problem.
- Teacher consolidates the discussion by showing a responsive website in all these devices simultaneously. Students notice the differences and notes are prepared.

TE Questions

1. *LO 7.1* *Type : Objective* *Score : 1*

   _____ is the service of providing storage space in a web server to serve files for a website to be made available on the Internet.

   PS: CG

   SI : Web hosting

2. *LO 7.2* *Type : Short answer* *Score : 3*

   Mr. Mohan wants to host a personal website with minimal cost. Which type of web hosting would you advise for him? Justify your answer.

   PS: CA

   SI : Shared hosting

3. *LO 7.3* *Type : Short answer* *Score : 3*

   The principal asked the Computer Science teacher to create a website for the school immediately. Can you assist the teacher in taking decision on buying hosting spaces. What are the factors to be considered while buying hosting space?

   PS: CA

   SI : For specifying the factors.

4. *LO 7.2* *Type : Short answer* *Score : 2*

   Choose the odd one out, and justify your answer.

   a) Shared hosting

   b) Dedicated hosting

   c) DNS

   d) Virtual Private Server

   PS: CA

   SI : DNS, all others are types of web hosting.

5. LO 7.2 *Type : Essay* *Score : 5*

   Explain different types of web hosting?

   PS: CA

   SI : shared hosting, dedicated hosting, virtual private server

6. *LO 7.4* *Type : Short answer* *Score : 2*

What is 'A record'?

PS: CA

SI : Definition of the term

7. *LO 7.4* *Type : Short answer* *Score : 2*

What is the use of FTP client software?

PS: CA

SI : Transfer of files from our computer to web server

8. *LO 7.5* *Type : Short answer* *Score : 3*

Haseena has decided to host her new website using free hosting facility; her friend Rinisha is against this move. Can you guess her argument against the utilization of free hosting facility?

PS: CG

SI : Limitations of free web hosting.

9. *LO 7.6* *Type : Objective* *Score : 1*

Joomla is an example for

a) CMS

b) ISP

c) DNS

d) None of the above

PS: CG

SI : CMS.

10. *LO 7.7* *Type : Essay* *Score : 5*

What is responsive web design? Why is it gaining importance recently?

PS: CG

SI : definition, many devices with different sizes are used in accessing Internet.

Assessment Worksheet 7.1

1. Define web hosting.
2. Name any two types of web hosting.
3. ICANN has database which contains a list of all _____.
4. 'A record' stands for _____.
5. Dedicated hosting
   a) shares server with other websites.
   b) is usually inexpensive.
   c) does not guarantee performance.
   d) offers freedom for the clients to choose the hardware and the software.

Assessment Worksheet 7.2

1. SFTP uses _____ protocol which provides secure file transfer facility.
2. CMS stands for _____.
3. Give any two examples of CMS.
4. What is responsive web design?
5. _____ web design helps in viewing web pages in different devices comfortably.

8 Database Management System

Introduction

This unit introduces learners to the concept of an effective record keeping system, database management system (DBMS). The limitations of conventional file systems and advantages of DBMS are also discussed. At this stage, learner identifies the pros and cons of normal file systems, and recognizes the various advantages of using the DBMS. This unit explores the concept of data abstraction and data independence. In the next stage, the learners are familiarized with main terminologies in relational database management system. This unit also discusses relational algebra and its operations. From this unit the learners should get a concrete idea about the concept of DBMS, relational algebra and various operations on relational algebra. The teacher should provide learners with maximum queries to create a solid idea on relational algebra.

Values and Attitudes

- ✓ Ability to use most efficient data storage mechanism.
- ✓ Sharing and caring through collaboration and co-operation.
- ✓ Approach a problem positively and arrive at solutions through logical thinking.

Unit Frame

Periods: 15

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Need of database. ✓ Communicating ✓ Identifying	General discussion on files in computer. ***Assessment:*** ➢ Activity log	1. Recognizes the need for files.
Concept of database. ✓ Communicating ✓ Identifying	Group discussion on the limitations of conventional file systems. ***Assessment:*** ➢ Activity log	2. Identifies the major limitations of the conventional file management system.
Advantages of DBMS. ✓ Communicating ✓ Identifying ✓ Comparing	General discussion on various merits of DBMS. ***Assessment:*** ➢ Activity log	3. Lists and explains the different advantages of the database management system.
Components of the DBMS environment. ✓ Communicating ✓ Identifying ✓ Comparing	General discussion on various components of the DBMS and their purpose. ***Assessment:*** ➢ Activity log	4. Lists the various components of the DBMS and explains their purpose.
Users of database. ✓ Communicating ✓ Identifying ✓ Comparing	General discussion on different types of users and their roles in the DBMS. ***Assessment:*** ➢ Activity log	5. Recognizes the types of users and their roles in the DBMS environment.
Data abstraction and Data independence. ✓ Communicating ✓ Identifying	Discussion on levels of data abstraction and data independence in DBMS. ***Assessment:*** ➢ Activity log	6. Explains the levels of data abstraction and data independence in DBMS.
Relational data model. ✓ Communicating ✓ Identifying	Discussion on the relational model. ***Assessment:*** ➢ Activity log	7. Explains the relational model by citing examples.
Terminologies in RDBMS. ✓ Communicating ✓ Identifying ✓ Observing	Discussion on the various terminologies in RDBMS. ***Assessment:*** ➢ Activity log	8. Uses the different terminologies in RDBMS appropriately.

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Relational Algebra. ✓ Communicating ✓ Identifying ✓ Applying ✓ Problem solving	Discussion on the various operations in relational algebra. Prepare relational algebra query. ***Assessment:*** ➢ Activity log ➢ Predicted output of relational algebraic expressions. ➢ Assignment	9. Applies and evaluates the various operations in relational algebra.

Process Assessment

General discussions, Activity Log preparation.

Portfolio Assessment

Activity Log

Unit-wise Assessment

- Written test can be conducted using the questions given in the 'Know your Progress' section and sample questions provided in the text book.
- Surprise test can be conducted using the questions in relational algebra.

Towards the Unit:

Introduction to Relational Data Model

(1 Period)

Suggested activities: General discussion on database and RDBMS using real life examples and preparation of notes.

Teacher initiates a general discussion on the importance of RDBMS.

- Students are asked individually to identify real life situations where the concept of RDBMS is applied. The following examples may be given as clues:
  1. School admission register, school library register etc.
  2. A document containing the name, age and place of the students in a class.

Teacher poses questions like 'How are data written in the register?" or "How do we write the details of students in a sheet of paper?".

- Responses are invited randomly and consolidation is made as follows:
  - o Data in registers is written row-wise and column-wise, some type of databases also store data in this manner.
  - o Database that stores data in rows and columns is called relational database management system.
  - o Introduces table, rows, columns etc.
- The teacher ensures that the consolidation points are written in the Activity Log.

TE Questions

1. *LO: 8.6* *Type : Objective* *Scores: 1*

   Choose the correct database level that is closest to the storage device.

   a. External b. Logical

   c. Physical d. Conceptual

   PS: CA

   SI: c or Physical

2. *LO: 8.3* *Type : Objective* *Scores : 3*

   A bank chose a database system instead of simply storing data in conventional files. What are the merits expected by the bank?

   PS: CA

   SI: Advantages of DBMS

3. *LO: 8.8* *Type : Objective* *Scores : 1*

   In the relational model, degree is termed as _____.

   a. Number of tuples. b. Number of attributes.

   c. Number of tables. d. Number of constraints.

   PS: CA

   SI: b or Number of attributes

4. *LO: 8.6* *Type : Objective* *Scores : 1*

Abstraction of the database can be viewed in _____ levels.

PS: CA

SI: 3

5. *LO: 8.8* *Type : Short answer* *Scores : 3*

A table with three columns is given below. Find the best match for the items in column A from those given in column B and column C.

Column A	Column B	Column C
Rows	Degree	Storage
Column	Physical level	Tuples
Data abstraction	Cardinality	Attributes

PS: CG

SI: Rows - Cardinality - Tuples

Column - Degree - Attributes

Data abstraction - Physical level - Storage

6. *LO: 8.9* *Type : Objective* *Scores : 1*

A file manipulation command that extracts some of the columns from a file is called _____.

a. SELECT b. PROJECT

c. UNION d. INTERSECTION

PS: CA

SI: b. PROJECT

7. *LO: 8.8* *Type : Objective* *Scores : 1*

An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true?

a. A is a candidate key b. A is not a candidate key

c. A is a primary Key d. Both (a) and (c)

PS: CG

SI: b. A is not a candidate key

8. *LO: 8.8* *Type : Short answer* *Scores : 2*

How many distinct tuples and attributes are there in a relation instance with cardinality 22 and degree 7.

PS: CG

SI: Number of tuples 22 and attributes 7.

9. *LO: 8.8* *Type : Objective* *Scores : 1*

Which of the following keys does not allow null values?

a. Primary Key b. Candidate key

c. Both a. and b. d. None of these

PS: CG

SI: c. Both a and b.

10. *LO: 8.8* *Type : Objective* *Scores : 1*

_____ model operates at the lowest level of abstraction, describing how the data is saved on storage devices.

a. External level b. Physical level

c. Conceptual level d. View level.

PS: CA

SI: b. Physical level

11. *LO: 8.8* *Type : Objective* *Scores : 1*

In a relational model, rows are termed as _____.

a. Tuples b. Attributes c. Tables d. Cardinality

PS: CA

SI: a. Tuples

12. *LO: 8.8* *Type : Short answer* *Scores : 2*

Distinguish between primary key and candidate key?

PS:

SI: Write any 2 points.

13. *LO: 8.8* *Type : Short answer* *Scores : 3*

Distinguish between primary key and alternate key.

PS: CA

SI: Give two points relating to primary key and alternate key.

14. *LO: 8.6* *Type : Short answer* *Scores : 4*

Describe the various levels of data abstraction? How are these levels of data abstraction related with data independence?

PS: CA

SI: Definition of data abstraction and data independence.

15. *LO: 8.3* *Type : Short answer* *Scores : 3*

Data sharing is an essential feature of DBMS. How data sharing reduces the data inconsistency in a database?

PS: CA

SI: Explains data redundancy, data inconsistency and data sharing.

16. *LO: 8.8 and 8.9* *Type : Short answer* *Scores : 2*

Cardinality of a table T1 is 10 and of table T2 is 8 and the two relations are union compatible. If the cardinality of result T1 ∪ T2 is 13, then what is the cardinality of T1 ∩ T2? Justify your answer.

PS: CG

SI: 5, give explanation.

17. *LO: 8.8 and 8.9* *Type : Short answer* *Scores : 3*

Cardinality of a table T1 is 10 and of table T2 is 8 and the two relations are union compatible.

What will be the maximum possible cardinality of T1 ∪ T2 ?

What will be the minimum possible cardinality of T1 ∪ T2 ?

PS: CG

SI: maximum cardinality of T1 ∪ T2 is 18 and the minimum possible cardinality of T1 ∪ T2 is 8.

18. *LO: 8.6* *Type : Short answer* *Scores : 3*

How are schema layers related to the concepts of logical and physical data independence?

PS: CA

SI:Definition of logical and physical data independence

19. *LO: 8.4* *Type : Short answer* *Scores : 2*

Lists the various components in DBMS environment.

PS: CA

SI: Give the name of components.

20. *LO: 8.9* *Type : Essay* *Scores : 4*

Consider the instance of the EMPLOYEE relation shown in the following table. Identify the attributes, degree, cardinality and domain of Name and Emp_Code.

Emp_Code	Name	Department	Designation	Salary
1000	Sudheesh	Purchase	Clerk	15000
1001	Dhanya	Sales	Manager	25000
1002	Fathima	Marketing	Manager	25000
1003	Shajan	Sales	Clerk	13000

PS: CA

SI: Attributes-Emp_Code, Name, Department, Designation, Salary.

Degree - 5, Cardinality - 4, Domain of Name - any valid name.

21. *LO: 8.9* *Type : Essay* *Scores : 6*

Using the instance of the EMPLOYEE relation shown in question 20, write the result of the following relational algebra expressions.

$\sigma_{\text{Department="Marketing"}}$ (EMPLOYEE).

$\sigma_{\text{salary>10000 ^ Department="Sales"}}$ (EMPLOYEE).

$\sigma_{\text{salary>12000 v Department="Sales"}}$ (EMPLOYEE).

$\pi_{\text{name, designation}}$ (EMPLOYEE).

$\pi_{\text{name, department}}(\sigma_{\text{Designation="Manager"}}$ (EMPLOYEE)).

$\pi_{\text{name, Department}}(\sigma_{\text{Designation="Clerk" ^ salary > 20000}}$ (EMPLOYEE)).

PS: CG

SI: Draw the resultant table.

22. *LO: 8.2 and 8.3* *Type : Essay* *Scores : 5*

Define database management system and explain the various merits and demerits of DBMS.

PS: CA

SI: Definition of DBMS, merits and demerits of DBMS.

23. *LO: 8.5* *Type : Essay* *Scores : 5*

Expalin the different types of database users with their role in database environment?

PS: CA

SI:Different users with their role.

24. *LO: 8.8 and 8.9* *Type : Essay* *Scores : 5*

What are keys? Explain the various keys in DBMS.

PS: CA

SI: Definition of keys: primary key, candidate key, alternate key and foreign key.

25. *LO: 8.9* *Type : Short answer* *Scores : 4*

Explain the SELECT and PROJECT operation in relational algebra with suitable example.

PS: CG

SI:Definition of SELECT and PROJECT, give example.

26. *LO: 8.5* *Type : Short answer* *Scores : 3*

What are the main tasks performed by database administrator?

PS: CA

SI: Role of DBA

27. *LO: 8.9* *Type : Short answer* *Scores : 4*

Explain the UNION and INTERSECTION operation in relational algebra with suitable example.

PS: CG

SI: Definition of UNION and INTERSECTION, give example.

28. *LO: 8.9* *Type : Essay* *Scores : 5*

Consider the relation, Customer (Acc_No, Name, Branch_Name, Balance). Write the following relational algebra statements.

a. Display the name of all customers.

b. Display the name of customers whose balance amount is above

50,000.

c. Display the details of all customers in KOCHI branch.

d. Display the names and balance amount of customers in CALICUT branch whose balance amount is below 50,000.

e. Display the account number and balance of all customers.

PS: CG

SI: Correct relational algebra statements.

Assessment Worksheet 8.1

1. List the names of various operations in relational algebra.
2. What is the purpose of using SELECT operation?
3. Distinguish between UNION and INTERSECTION operation.
4. State true or false. CARTESIAN PRODUCT combines two relations.
5. What is the use of PROJECT operation?

Assessment Worksheet 8.2

1. Lists the names of various types of data abstractions.
2. What is data independence?
3. Define physical data independence and logical data independence.
4. _____ level of data abstraction describes how the data is saved in storage devices.

9 Structured Query Language

Introduction

This chapter introduces a new language called SQL to learners, which is used to communicate with a database. According to ANSI (American National Standards Institute), it is the standard language for relational database management systems. In this stage, the learners are familiarized with creation of tables, inserting data into a table, manipulating and deleting data in a table, modifying the structure of a table, removing a table etc. on relational database. In this chapter, we also introduce the concept of views. From this, the learners should get a clear cut idea about the concept of SQL. Some common relational database management systems that use SQL are: MySQL, Oracle, Sybase, Microsoft SQL Server, Access, Ingres etc. Here, we use one of the most popular open source RDBMS - MySQL to implement Structured Query Language. The teacher should provide learners with various types of questions to create a solid idea on SQL.

Values and Attitudes

- ✓ Appreciates SQL for managing data bases in a meaningful way.
- ✓ Developing sense for presenting ideas in a concise and comprehensive fashion.
- ✓ Increases the logical reasoning power.

Unit Frame

Periods: 25

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Structured Query Language ✓ Understanding ✓ Communicating ✓ Observing ✓ Analysing	General discussion on database and RDBMS using real life examples. Worksheet 9.1 Concluding with the need of a language to manage relational database system - SQL. ***Assessment:*** ➢ Preparation of notes ➢ Worksheet 9.2	1. Recognises the importance and features of Structured Query Language.
DDL, DML and DCL commands ✓ Understanding ✓ Communicating ✓ Observing ✓ Analysing	Discussion on components of SQL ***Assessment:*** ➢ Preparation of chart that shows different categories of SQL commands and their purpose.	2. Explains the components of SQL. 3. Distinguishes the features of DDL, DML and DCL commands.
Data types in MySQL ✓ Understanding ✓ Observing ✓ Analysing	General discussion on MySQL and its features like data types and their properties. *Assessment:* ➢ Preparation of notes	4. Identifies the characteristics of MySQL. 5. Lists different data types and their features.
Constraints ✓ Understanding ✓ Observing ✓ Analysing	Discussion on the need of constraints and different types of constraints available in MySQL. ***Assessment:*** ➢ Preparation of chart shows the different data types, constraints and their characteristics. ➢ Preparation of notes	6. Explains the effect of different constraints.
DDL commands ✓ Understanding ✓ Communicating ✓ Recognizing DML commands ✓ Understanding ✓ Observing	General discussion on DDL commands like CREATE, ALTER and DROP. ***Assessment:*** ➢ Lab activity on creation of different tables. ➢ Preparation of notes.	7. Performs operations using DDL commands like CREATE, ALTER, DROP. 8. Uses DML commands

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
✓ Recognizing ✓ Analyzing	Group discussion on various DML commands used to insert, retrieve, edit, and remove data from the table. ***Assessment:*** ➢ Preparation of notes. ➢ Lab work to familiarise the execution of various SQL commands. ➢ Queries ➢ Predicted outputs	SELECT, INSERT, UPDATE, and DELETE for data manipulation. 9. Identifies various clauses associated with SQL commands and their purpose. 10. Uses operators for setting different conditions.
Aggregate functions ✓ Understanding ✓ Observing ✓ Recognizing ✓ Analyzing	General discussion on aggregate functions in SQL. Notes preparation. ***Assessment:*** Lab work to familiarise the execution of various SQL commands including aggregate functions. ➢ Correction of queries ➢ Predicted outputs	11. Lists different aggregate functions and their usage.
Nested query ✓ Understanding ✓ Observing	General discussion on the need of nested queries in SQL with real life examples. ***Assessment:*** ➢ Notes preparation. ➢ Lab work to familiarise the execution of various SQL commands including nested queries. ➢ Assignment	12. Constructs nested queries for information retrieval.

Process Assessment

General discussions, Activity Log preparation, Lab work.

Portfolio Assessment

Activity Log, SQL Tables, Observation Book.

Unit-wise Assessment

- Written test can be conducted using the questions given in the Know your Progress section and sample questions provided in the textbook.

Towards the Unit:

Introduction to Structured Query language

(1 Period)

Suggested activity : General discussion on introduction to SQL and notes preparation.

Teacher asks some questions related to DBMS to revise the concept by using the worksheet.

- Invites responses randomly and ensures that the concepts of DBMS are clear into students. If not, take necessary steps to clarify it to the students.

Teacher initiates a general discussion on the importance of a language which is used to manipulate database.

- Students are asked individually to identify real life situations where the concept of database is applied. The following examples may be given as clues:

1. School admission register, school library register, patient register in a hospital etc.
2. Stock details of medicines in a medical shop.
3. The results of class XII students stored in a computer.

Citing the above examples, teacher asks students whether they know how these databases are created.

- Responses are invited randomly and consolidation is made
- Worksheet 9.1 is given to the students. After completing it individually, correctness of the responses is ensured through group discussions. The responses are invited and consolidation is made.

- The teacher ensures that the consolidation points are written in the Activity Log.

SQL commands

(5 Periods)

Suggested activity: Assignment and Lab work to perform all commands in SQL.

This activity can be performed at the final stage of the chapter to evaluate the knowledge of the learner.

- Teacher asks every student to create a table of their own choice. The table names can be similar, but they should have different fields.
- Encourage the students to enter data into the table. (at least 10 records)
- At this stage, ensure the difference in the structure of table, correct usage of data types and constraints in each column of table by peer to peer verification of students. Also ask the verifying student to write 10 questions based on the data on the table (questions should be framed in such a way that queries contain important commands).
- Then each student tries to write SQL queries for the questions.
- After completion of the SQL queries, peer evaluation is conducted and make necessary changes are made in the queries wherever necessary.
- Ask the students to do the above activities as a Lab activity and check whether the desired results are produced by the query or not. If not, ask them to correct the query.
- Students record the table details and corrected queries in their log book along with the output.

PE Questions

Refer to the questions given in the Let us Practice section of the textbook and Part III of the Teacher text.

TE Questions

1. *LO : 9.1* *Type : Short answer* *Score : 2*

   How is SQL different from other computer high level languages?

   PS : CA

   SI : Definition and purpose of SQL.

2. *LO : 9.3* *Type : Objective* *Score : 1*

   Manu wants to add a new column to a table. What type of command is used to do it?

   a) DML b) DDL c) DCL d) none of the above

   PS : CA

   SI : DDL

3. *LO : 9.7* *Type : Objective* *Score : 1*

   (a) From the list given below select the names that cannot be used as a table name.

   Adm_No., Date, Salary2006, Table, Column_Name, Address

   PS : CA

   SI : Date, Table

   (b) Justify your selection.

   PS : CA

   SI : Table is a keyword, Date is a data type.

4. *LO : 9.5, 9.6, 9.7, 9.8, 9.11, 9.12* *Type : Essay* *Score : 5*

   Consider the table given below and write SQL statements for the following queries.

Item code	Item name	Unit Price	Stock
1001	Rice	38	150
1002	Daal	48	98
1003	Sugar	32	120
1004	Chilly	52	90
1005	Salt	14	65

a) Create a table called STOCK as mentioned above with suitable data types.

b) List the item which has minimum stock.

c) Which is the costly item?

d) List the items in the order of unit price.

e) How many different items are there in the shop?

PS : CG

SI : Proper usage of Queries with correct syntax.

5. *LO : 9.7* *Type : Objective* *Score : 1*

The command to eliminate the table CUSTOMER from a database is:

a) REMOVE TABLE CUSTOMER b) DROP TABLE CUSTOMER

c) DELETE TABLE CUSTOMER d) UPDATE TABLE CUSTOMER

PS : CA

SI : (b) DROP TABLE CUSTOMER

6. *LO : 9.9* *Type : Objective* *Score : 1*

_____ keyword in SQL is used with wildcard characters.

a) LIKE only b) IN only c) NOT IN only d) IN and NOT IN

PS : CA

SI : (a) LIKE only

7. *LO : 9.95, 9.10, 9.11* *Type : Short answer* *Score : 3*

Consider the table ITEMS.

Item Code	Name	Category	UnitPrice	SalesPrice
0001	Pencil	Stationery	5.00	8.00
0002	Pen	Stationery	8.00	10.00
0003	Notebook	Stationery	10.00	20.00
0004	Chappal	Footwear	50.00	70.00
0005	Apple	Fruits	60.00	90.00
0006	Orange	Fruits	40.00	60.00
0007	Pen	Stationery	10.00	9.00

Predict the output of the following queries.

a)
```
SELECT ITEMCODE, NAME FROM ITEMS
WHERE CATEGORY = 'STATIONERY';
```

b)
```
SELECT * FROM ITEMS WHERE SALESPRICE < UNITPRICE;
```

c)
```
SELECT CATEGORY, COUNT(*) FROM ITEMS
GROUP BY CATEGORY;
```

PS : CG

SI : Correct output

8. *LO : 9.8* *Type : Short answer* *Score : 3*

(a) Prabha created a table in SQL with 10 records. Which SQL command is used to change the values in a column of specified rows?

PS : CA

SI : `UPDATE`

(b) : Write the format also. Type : short answer

PS : CG

SI : syntax of `UPDATE` command.

9. *LO : 9.1* *Type : Objective* *Score : 1*

Give an example for RDBMS package.

PS : CA

SI : MySQL

10. *LO : 9.5, 9.6* *Type : Short answer* *Score : 4*

As a part of your school project you are asked to create a table Student with the fields `RollNo, Name, Date_of_Birth` and `Score_in_IT`.

i) Set the column RollNo as the primary key, the field Name should not be empty.

ii) Name the most appropriate SQL data type required to store the following data.

(a) Name of a student (maximum 70 characters).

(b) Date_of_Birth of a student.

(c) Percentage of marks obtained (correct to 2 decimal places).

PS : CA

SI : i) Primary key, Notnull

i) a) VARCHAR b) DATE c) DECIMAL(5,2)

11. *LO : 9.9* *Type : Objective* *Score : 1*

Which of the following is the correct order of keywords for SQL SELECT statement?

a) SELECT, FROM, WHERE b) FROM, WHERE, SELECT

c) WHERE, FROM, SELECT d) SELECT, WHERE, FROM

PS : CA

SI : a) SELECT, FROM, WHERE

12. *LO : 9.9* *Type : Objective* *Score : 1*

_____ command changes tuples in a table based on a condition.

a) PROJECT b) SELECT c) UNION d) UPDATE

PS : CA

SI : d)UPDATE

13. *LO : 9.7* *Type : Short answer* *Score : 3*

Give the syntax of CREATE TABLE command.

PS : CG

SI : correct syntax

14. *LO : 9.7, 9.8* *Type : Essay* *Score : 5*

Explain four DML commands in SQL with syntax and example.

PS : CG

SI : Explanation of SELECT, INSERT, UPDATE, and DELETE commands.

15. *LO : 9.7, 9.8, 9.9, 9.10, 9.11* *Type : Essay* *Scores : 5*

A hospital has maintained a database for patients with the fields.

IPNO	Varchar(10)	Primary key
Patient Name	Varchar(30)	
Age	Number(3)	
RoomNo	Number(3)	

Write SQL queries to do the following.

a) Construct the table.

b) Modify the structure of the table by adding the field DoctorName.

c) Update DoctorName field with a value 'LINDA' for a particular record with IPNO = 30

d) Display name of the patients in the age group 20 to 30.

e) Display details of all patients whose name start with An.

PS : CG

SI : Proper usage of Queries with correct syntax.

16. *LO : 9.10* *Type : Objective* *Scores : 1*

Which keyword can be used with `SELECT` command to avoid duplication of rows in the selection?

PS : CA

SI : `DISTINCT`

17. *LO : 9.6, 9.7* *Type : Objective* *Scores : 1*

Pick the odd one out.

(a) `CREATE` (b) `SELECT`

(c) `UPDATE` (d) `INSERT`

PS : CA

SI : `CREATE`

18. *LO : 9.3, 9.4* *Type : Short answer* *Scores : 3*

(a) Classify the following SQL commands.

`CREATE TABLE, INSERT INTO, ALTER TABLE, DELETE, UPDATE, DROP TABLE.`

(b) List the features of each category.

PS : CG

SI : Classification into DDL, DML and their features.

Assessment Worksheet 9.1

1. What is DBMS?
2. Is it essential to implement DBMS rather than using conventional file keeping system? Justify your answer.
3. In RDBMS, where are the data stored?
4. Why is a table also called a relation?
5. In RDBMS, the rows and columns of tables are represented by some other names. What are they?
6. What is Degree and Cardinality?

Assessment Worksheet 9.2

1. SQL stands for _____.
2. What is the purpose of SQL?
3. In your point of view, What are the features of SQL?

10 Enterprise Resource Planning

Introduction

The concept of enterprise resource planning (ERP) is an integrated system for business information management. Being a commerce student, the learner will have an idea about a business firm or an enterprise. So the teacher should start the discussion by introducing the concept of an enterprise and then he can motivate the learner to identify different functional units of an enterprise. The ERP is to be introduced as an integrated solution to these functional units. Based on the nature of an enterprise, the number and names of functional units will be different.

The ERP packages mentioned in the text book are the most popular packages in the current market. New packages with advanced features may be introduced in the coming days. The ERP related technologies like SCM, DSS, PLM, etc. are broad and need more explanation. But our text book provides only a brief description.

If possible a field visit may be conducted to understand the functioning of an ERP installed firm. The teacher can use different activities like group discussion, slide show presentation and seminar for better transaction of the content.

Values and Attitudes

- ✓ Enhance the decision making ability and problem solving skill.
- ✓ Plan every activity before its implementation.
- ✓ Integrate different components of a system as a single unit.

Unit Frame

Periods: 10

Concepts/Ideas and Process skills	Process/Activities with Assessments	Learning outcomes
Enterprise and enterprise resource planning ✓ Identifying ✓ Explaining ✓ Communicating	General discussion on ERP by introducing the concept of enterprise. ***Assessment:*** ➢ Notes preparation	1. Identifies the need of ERP.
Functional units of ERP ✓ Identifying ✓ Observing	General discussion and illustration of functional units of ERP. ***Assessment:*** ➢ Preparation of notes ➢ Worksheet	2. Lists different functional units of ERP.
Business process re-engineering ✓ Identifying ✓ Observing ✓ Communicating	Illustration of need of ERP by discussing the need of BPR in the implementation of ERP. ***Assessment:*** ➢ Preparation of notes.	3. Explains the importance of BPR in ERP implementation.
Implementation of ERP ✓ Observing ✓ Inferring	General discussion and illustration of different phases of ERP implementation. ***Assessment:*** ➢ Note preparation	4. Recognizes different phases in implementing ERP.
ERP packages ✓ Identifying ✓ Communicating ✓ Comparing	Slide presentation and discussion by comparing different ERP solution providers. ***Assessment:*** ➢ Chart preparation ➢ Preparation of notes ➢ Worksheet	5. Lists some important ERP packages.
Benefits and risks of ERP ✓ Identifying ✓ Observing ✓ Inferring	Group discussion and presentation of each group. Conclusion by the teacher. ***Assessment:*** ➢ Note preparation	6. Explains the benefits and risks of ERP implementation.
ERP and related technologies ✓ Identifying ✓ Communicating ✓ Observing	Seminar on ERP related technologies. ***Assessment:*** ➢ Seminar report ➢ Note preparation	7. Becomes familiar with some technologies related to ERP.

Process Assessment

General Discussion, Group Discussion, Seminar, Note Preparation

Portfolio Assessment

Activity log, Seminar report

Unit wise Assessment

- Written test may be conducted using questions provided in the text book.
- Quiz competition.

Towards the Unit:

ERP related technologies

(1 Period)

Suggested activities: Seminar on ERP related technologies

- The teacher completes the discussion about concepts in ERP and then a seminar may be conducted on ERP related technologies.
- Do the following steps before conducting the seminar.
    - Divide the students into five or six groups.
    - Assign each group a particular topic from ERP related technology.
    - Teacher randomly selects a group to start the seminar.
    - Teacher randomly selects a student from the selected group.
    - All the group members need to present the topic.
    - Other group members must listen to the seminar and teacher may ask questions to them to ensure their attention.
    - Note preparation by all other groups.
    - Best group and presenter may be selected from the class.
- The entire learners must prepare a seminar report about the assigned topic.
- All the learners must prepare a note during the seminar.
- The teacher concludes the seminar after giving his / her own comments.

TE Questions

1. *LO 10.4* *Type : Short answer* *Score : 2*

   The first five phases of ERP implementation are listed below which are not in the correct order.

   Package selection, BPR, Gap analysis, preevaluation screening, project planning.

   Arrange them in the correct order.

   PS : CA

   SI : Correct order of implementation phases.

2. *LO 10.7* *Type : Objective* *Score : 2*

   Pick the odd one out from the following list and justify your answer.

   CRM, MIS, SCM, SAP

   PS : CA

   SI : SAP. Others are ERP related technology. SAP is an ERP package.

3. *LO 10.3, 10.4* *Type : Objective* *Score : 1*

   Consider the following two statements.

   Statement 1: "The number of functional modules in an ERP vary with the nature of enterprise"

   Statement 2: "There is no connection between BPR and ERP"

   Then choose the correct one from the following:

   i) Both statements are true
   ii) Both statements are false
   iii) Statement 1 is true and statement 2 is false
   iv) Statement 1 is false and statement 2 is true

   PS : CG

   SI : iii

4. *LO 10.2* *Type : Essay* *Score : 5*

   "ERP integrates different functional modules of an ERP. Based on the nature of enterprise the module may vary". Briefly explain common functional modules available in ERP.

PS : CA

SI : Explanation on the functional units of ERP.

5. *LO 10.2* *Type : Objective* *Score : 1*

Choose the correct answer from the following.

Implementation of ERP in an enterprise _____.

a) Minimizes planning risks
b) Integrates different functional units of an enterprise
c) Uses centralized database
d) All of the above

PS : CA

SI : d

6. *LO : 10.2, 10.7, 10.5* *Type : Objective* Score : 2

Match the following.

i) Finance module	a) Supply chain
ii) ORACLE	b) Functional unit of ERP
iii) BPR	c) ERP package
iv) SCM	d) Re-engineering

PS : CA

SI : i-b, ii-c, iii-d, iv-a

7. *LO : 10.6* *Type : Essay* *Score : 5*

Mr. Suresh uses separate software for managing different functional units of an enterprise and Mr. Saleem uses an integrated software package for managing the overall functioning of the enterprise. Compare the benefits and risks of the above two methods of enterprise management.

PS : CA

SI : Benefits and risks of ERP

8. *LO 10.7* *Type : Short answer* *Score : 3*

Write a short note on the following terms.

i) DSS

ii) MIS

PS : CA

SI : Brief explanation.

9. *LO 10.4 Type : Essay* *Score : 5*

"Implementation of a new ERP system in an enterprise is not a single step action". Justify this statement by listing all the phases of ERP implementation in the correct order.

PS : CG

SI : Justify by Listing all phases of ERP implementation.

10. *LO 10.5, 10.2 Type : Objective* *Score : 1*

State True or False.

i) Each ERP package can manage all the functional units of an enterprise.

ii) In ERP, a centralized database is used for integrating functional units.

PS : CG

SI : i) False ii) True

Part III

Practical Evaluation

GUIDELINES FOR LAB WORK AND PRACTICAL EVALUATION OF COMPUTER APPLICATIONS (COMMERCE)

2014 – 15 Admission onwards

We follow outcome focussed assessment approach in the evaluation process in the Kerala School Curriculum 2013. Term-end evaluation is an important aspect of assessment. Along with Term-end Evaluation at the end of an academic year, Practical Evaluation (PE) is to be conducted. PE is the term-end assessment of the lab work done in the academic year. Lab work is an integral part of the Continuous and Comprehensive Evaluation (CCE). Hence, it should be considered for the process assessment and portfolio assessment which are the components of Continuous Evaluation (CE) score.

A. Syllabus for Practical

Lab work is a part of the transaction of certain contents in the syllabus. Students can attain the learning outcomes associated with some of the concepts/content only through the lab work. Hence the practical should begin in Class XI itself and it should go on with the respective theoretical aspects. Areas to be covered for the lab work and the minimum number of problems are given below:

1. Programming in C++ (10 problems)

- if – else statements (2 problems)
- switch statement (1 problem)
- Looping statements (3 problems)
- Array manipulation (2 problems)
- Functions (2 problem)

2. Developing HTML documents (7 problems)

- Basic tags, <IMG> tag (1 problem)
- Lists (nesting) (1 problems)
- Hyper linking (1 problem)
- Table (2problems)
- Frame (1 problem)
- Form (1 problem)

3. Client side programming with JavaScript (3 problems)

- Control structure (2 problems)
- Data validation (1 problem)

4. Database queries using MySQL (5 problems)

- Five tables should be identified and queries should be designed in such a way that all clauses, operators and aggregate functions are to be covered.

B. Lab Work

This is an activity by which, the concepts acquired and observations noted are practically implemented in the lab, and thereby, more clarity about the concepts and operational skills are achieved. The students should also be convinced about the use of computer for problem solving with the help of user developed programs. This activity makes the students utilise the computer to develop applications in various fields. The active participation and involvement of the students are to be ensured.

A minimum of 25 problems, as specified above, are to be solved through the lab work. Sample questions from each area are given as Appendix-1 of this document. The questions are grouped into three levels for each area, based on the difficulty level. While selecting the minimum required questions, we should ensure that, questions are chosen from all the three levels. The number of questions from each level should be in the ratio 5:3:2 for each area of the syllabus. A sample list of 25 problems as per the foresaid criteria is given as Appendix-2.

Practical Log Book

Practical Log Book (PLB) is a standard record book in which all the activities related to lab work are recorded. A PLB is opened in Class XI for the lab work and the same is used in Class XII. Lab work is a continuous

process. The PLB should contain a minimum of 25 works as specified in the practical syllabus. The format of recording in Practical Log Book may be as follows:

Programming in C++

LHS page	RHS page
• Algorithm / Flowchart • Sample Input and Output	• Problem number and Date of practical work • Problem statement • Source Code

Web Applications (HTML documents, JavaScript)

LHS page	RHS page
• Tags and attributes required • Printout of resultant web page	• Problem number and Date of practical work • Problem statement • HTML Code

Database queries using MySQL

LHS page	RHS page
• Table with sample records • Output of querieso	• Problem number and Date of practical work • Table structure and queries • SQL statements

The teacher should verify the correctness of each work and affix his/her signature along with date and remarks, if any.

Procedure

The lab work consists of threefold procedure – preparatory work, tryout and reporting. Teachers should ensure that the students pass through all these three stages sequentially throughout the academic year.

Preparatory work: The student who comes to the computer lab to do practical work should be clear about the work he/she intends to do. He/She should also know the steps for doing the job using a computer, the software to be used, how it has to be operated, what the product should be, what should be its specifications and program code. All students should have their Practical Log Book while attending the lab period with the following details:

- Program number and date
- Problem statement
- Algorithm / Flowchart / Tags and attributes
- C++ source code/ HTML code / SQL statements

Tryout: In the case of C++ programming and web applications, the source code is typed, compiled and executed in the lab. During the debugging process, the corrections, if any, are noted down in the PLB also. When the output is obtained, it should be intimated to the teacher. Teacher performs process assessment and makes necessary recordings in both the PLB and Teacher's manual. Students record sample output in the PLB or take the printout of the output.

Reporting: The PLB with the final code and sample output (pasted printout in the case of web applications and office packages) is submitted and get it signed by the teacher before the next lab period.

The programs discussed in the class room are to be tried out in the lab. More problems are also available in the text book. Teacher is expected to ensure a minimum number of problems in the Practical Log Book covering all the areas suggested for practical evaluation. The prescribed proportion among the three groups should be strictly followed in the selection of questions.

C. Practical Evaluation (PE)

The problem solving skills and the competency in using various software packages are to be assessed through PE. The following are the guidelines to be followed while conducting PE:

- The questions should strictly be from the prescribed syllabus.
- Examination will be of 3 hours duration and maximum score will be 40.
- Practical evaluation will be conducted in batches. The maximum number of students in each batch is limited to 15.
- Students must attend the PE with Practical Log Book. It should contain a minimum of 25 programs covering the practical syllabus as described earlier. Only one notebook is enough for the Practical Log Book (*no rough – fair separation*). Practical Log Book should be certified at the end of Class XI as well as Class XII by the teacher-in-charge. The same should be verified and signed by the external examiner.

- The questions are to be finalised from the pool issued by the DHSE referring to the PLB.
- There will be three parts in the question paper. Part A contains questions from Programming in C++. Part B contains questions for web applications from the respective syllabus and Part C includes questions for database queries. A candidate has to attend two questions – one from Part A and the other from either Part B or C whichever is assigned.
- There should be a minimum of 16 question papers for each batch of 15 students. Each Question paper should contain a question from Part A and another Question from Part B or C. While framing questions for each question paper, it should be noted that if the question from Part A requires more time due to its higher level, the second question from Part B or C should be of lower level and vice versa.
- One question paper will be selected by the student at random from a set of 16 Question papers. Appropriate strategy may be adopted by the examiner to ensure the fair conduct of examination.
- Once the learner is assigned the questions, he/she should write the source code/ procedure/statements for any one of the questions and submit it to the examiner. The examiner checks the correctness of the logic or procedure and allows doing it on the computer if found correct. If the logic or procedure is approximately 70% correct, some clues or hints may be given and the student is allowed to try on the computer. If the logic (or procedure) is wrong, the examiner can give another problem from the same area with the same level. The student may be allowed to change the question within half an hour, if the question is found unanswerable. In such cases, score should be deducted appropriately.
- The debugging skills are to be assessed and credit should be given.
- The accuracy in the output is to be tested with proper sample data.
- Teacher should ensure that the programs developed as part of lab work and by the previous candidates are deleted before the commencement of the examination.
- The students are not allowed to use the help files of the software.

The score distribution for each question in C++ should be as follows:

• Logic of the solution (Program coding)	– 8 score	*16 score*
• Debugging skills (Error correction and execution)	– 6 score	
• Dynamic problem solving skills	– 2 score	

The score distribution for each question in web application should be as follows:

• Proper tags and attributes (Script if required)	– 8 score	*16 score*
• Debugging skills (Error correction and execution)	– 6 score	
• Dynamic problem solving skills	– 2 score	

The score distribution for each question in SQL should be as follows:

• Proper commands, clauses, operators, etc.	– 8 score	*16 score*
• Debugging skills (Error correction and execution)	– 6 score	
• Dynamic problem solving skills	– 2 score	

The score distribution for each question in Office packages should be as follows:

• Procedure / Formula / Menus & Commands / Tools	– 10 score	*16 score*
• Creativity and formatting ability	– 4 score	
• Dynamic skill in using the software	– 2 score	

Total score for 2 questions	**– 32 score**	***40 score***
Practical Log Book	**– 4 score**	
Viva voce	**– 4 score**	

- Viva voce should not create sense of fear among the students. It should not be formal in the form of an interview. It should be a casual interaction with the students during the evaluation to check whether he / she has conceptual / process clarity in the given two questions only. The examiner may ask 4 to 6 questions to award the scores for viva voce.
- The mark-list of the students should be prepared, reflecting the split scores along with the total score.
- The scores of the students are to be recorded in the mark sheet issued by the DHSE and send it to the DHSE as per the instructions given by the directorate.

Dynamic problem solving skills may be tested as follows:

- After completing the program, a slight modification in the problem can be made and let the learner modify the code to effect the change.
- The ability of the learner can be credited by awarding the 2 scores suitably.
- E.g.: If the original question is to find the largest among three numbers, ask to modify the code to find the smallest.

Sl. No.	Register Number	Qn. No.	Score Distribution						Total Score (40)
			Logic / Procedure (8 or 10)	Execution/ Output (6 or 4)	Dynamic Skills (2)	Total for 2 Qns. (32)	Practical Log Book (4)	ViVa Voice (4)	
1									
2									
3									
15									

Date of Exam: …..……...……

Signature: ……..…..

Name and Designation of Examiner

……

……

APPENDIX – 1

Pool of Questions
Programming in C++ (10 x 3 = 30 questions)

Level 1

1. Input a number and check whether it is positive, negative or zero.
2. Input three numbers and find the largest.
3. Input a digit and display the corresponding word using switch.
4. Find the sum of the digits of an integer number.
5. Display the multiplication table of a number having 12 rows.
6. Find the sum of the squares of the first N natural numbers without using any formula.
7. Find the length of a string without using strlen() function.
8. Input the heights of 10 students and find the average height.
9. Find the factorial of a number with the help of a user-defined function.
10. Read admission number, name and marks of three subjects of a student. Define a function named calc() to calculate average mark.

Level 2

1. Input three numbers and find the difference between the smallest and the largest numbers.
2. Input the principal amount, type of account (C for current a/c or S for SB a/c) and number of years, and display the amount of interest. Rate of interest for current a/c is 8.5% and that of SB a/c is 6.5%.
3. Assume that January 1 is Monday. Write a program using switch to display the name of the day when we input a day number in that month.
4. Input a number and check whether it is palindrome or not.
5. Write a C++ program to display the following patters:

```
* *    *    *    *
* *    *    *
* *    *
* *
*
```

6. Input a number and check whether it is prime or not.
7. Create an array of N numbers and count the number of even numbers and odd numbers in the array.
8. Input the price of a set of higher secondary textbooks and find the highest and lowest prices.
9. Input an integer number and display its binary equivalent with the help of a user-defined function.
10. Define a function to swap the contents of two variables. Using this function, interchange the values of three variables. E.g. A→B→C→A.

Level 3

Units consumed	Amount per Unit
Up to 100	Rs. 0.50/-
101 – 150	Rs. 0.75/-
151 – 200	Rs. 1.00/-
201 – 250	Rs. 1.50/-
Above 250	Rs. 2.00/-

1. Find the amount to be paid for the consumption of electricity when the previous and current meter-readings are given as input based on the conditions given in the table.
2. Input three numbers and find the smallest and the second smallest.
3. Find the area of a rectangle, a circle and a triangle. Use switch statement for selecting an option from a menu.
4. Display the first N terms of Fibonacci series.
5. Input two years (e.g. 1000, 2000) and display all leap years in between them.
6. Input the amount of sales for 12 months of a medical representative and find the average sales value without using an array.
7. Input a string and create a triangle using its characters as shown in the given example.

```
S
S   M
S   M   I
S   M   I   L
S   M   I   L   E
```

8. Read N numbers into an array and display the numbers larger than the average value.
9. Define separate functions to return simple interest and compound interest by accepting principle amount, time and rate of interest as arguments.
10. Define a function to accept an integer number and return its reverse (e.g. if the argument is 123 the return-value should be 321). Using this function display all palindrome numbers between a given range.

Web Applications (10 x 3 = 30 Questions)
(HTML - 7, JavaScript - 3)

Level 1

1. Design a simple and attractive web page for Kerala Tourism. It should contain features like background colour/image, headings, text formatting and font tags, images, etc.

2. Design a webpage as shown below using appropriate list tags.

Permanent members in UN Security Council

- Russia
- China
- USA
- UK
- France

3. Design a personal web page for your friend. It should have a link to his e-mail address.

4. Design a web page containing a table as shown below.

Terrestrial Planets (Source: NASA)

Planet	Day Length *(In Earth hours)*	Year Length *(In Earth days)*
Mercury	1408	88
Venus	5832	224.7
Earth	24	365.26
Mars	25	687

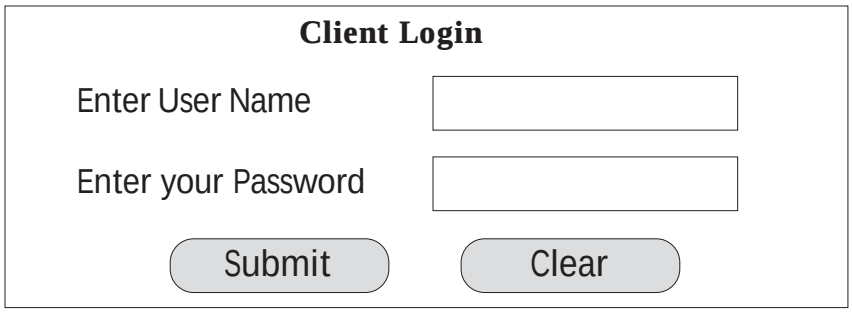
5. Design a web page containing a table as shown below.

Speed Limits in Kerala

Vehicles	**Near School** ***(In Km/hour)***	**Within Corporation/ Municipality** ***(In Km/hour)***	**In other roads** ***(In Km/hour)***
Motor Cycle	25	40	50
Motor Car	25	40	70
Light motor vehicles	25	40	60
Heavy motor vehicles	15	35	60

6. Design a web page with the heading "Department of Tourism, Government of Kerala" and save it with the file name "TourHead.htm". Create a frame page which divides it horizontally in the ratio 20:80. In the smaller area use the web page "TourHead.htm". In the larger area use the web page created for Kerala Tourism in Question No. 1.

7. Design a simple web page as shown below:



8. Develop a web page with two text boxes and a button labelled "Show". The user can enter a number in the first text box. On clicking the button, the second text box should display whether the number is even or odd. Write the required JavaScript.

9. Develop a web page with two text boxes and a button labelled "Show". The user can enter a number in the first text box. One clicking the button, the second text box should display the sum of all numbers up to the given number. Write the required JavaScript.

10. A web page should contain one text box for entering a text. There should be two buttons labelled "To Upper Case" and "To Lower Case". On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations.

Level 2

1. Design a web page for promoting vegetable cultivation at homes as shown in the figure. It should contain features like background colour/ image, headings and stylish fonts, images, marquee, etc.

2. Design a web page as shown below using appropriate list tags.

List of Nobel Laureates from India

Rabindra Nath Tagore

He was the first to get Nobel Prize from India. He received prize in literature in 1921. He got Nobel Prize for his collection of poems "Gitanjali".

C V Raman

He got Nobel for Physics in 1930. He received Nobel Prize for his contribution called Raman Effect.

Mother Teresa

Mother Teresa who founded Missionaries of Charity which is active in more than 100 countries received Nobel Prize in 1979.

Amartya Sen

Amartya Sen was awarded Nobel Prize in 1998 in Economics. He has made contributions to welfare economics, social choice theory etc.

Kailash Satyarthi

He is a child right activist who founded "Bachpan Bachao Andolan" in 1980. He shared Nobel prize for peace in 2014.

3. Design a simple web page about your school. Create another web page named address.htm containing the school address. Give links from school page to address.htm.

4. Design a web page that displays the share prices of various companies as given below.

National Stock Exchange – Market on 13th June 2015

Sector	Company	Price (Rs.)
IT	Infosys	1978.05
	TCS	2520.00
Banking	ICICI Bank	296.15
	Axis Bank	551.90
Pharmaceuticals	Sun Pharma	814.90
	Aurobindo Pharma	1279.00

5. Design a web page that displays the indent for Plus Two text books as given below.

Section	Book Name	Quantity
Language	English	100
	Malayalam	100
Commerce	Accountancy	80
	Business Studies	90
	Economics	85
	Computer Applications	100

6. Design a web page containing frames that divide the screen vertically in the ratio 50:50. Design two web pages - one containing the list of Indian cricket team members and the second page containing a list of Indian football team members.

7. Consider that your school is hosting an inter-school IT fair. Design a form web page that contains a form for accepting registrations. The form page should contain facility to enter school name, user name, password and a mobile phone number. It should also contain buttons for saving and clearing the data entered.

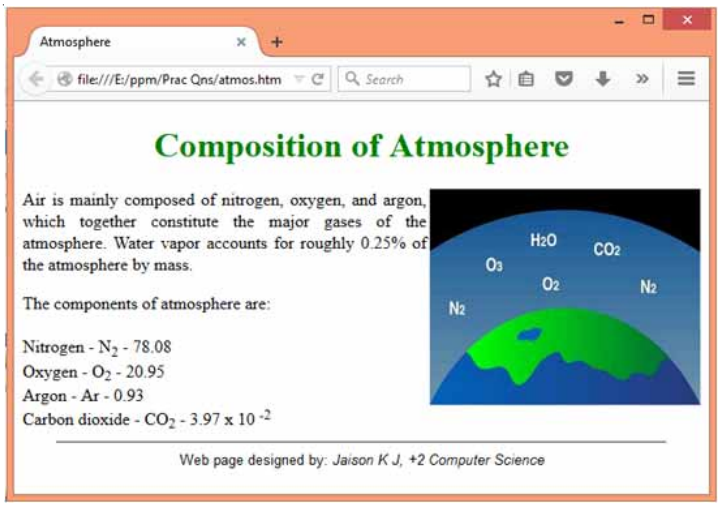
8. Develop a simple calculator using JavaScript. The web page should contain two text boxes of entering two numbers and another text box for displaying the answer. There should be four buttons to perform addition, subtraction, multiplication and division. On clicking a button, the corresponding result should be displayed in the answer box. Write the required JavaScript.

9. Develop a web page with two text boxes and a button labeled "Show". The user can enter a number in the first text box. One clicking the button, the second text box should display the day corresponding to the given number using switch statement in JavaScript. (1 - Sunday, 2 - Monday, ….., 7 - Saturday).

10. Develop a web page for the inter-school IT fair conducted by your school. The web page should contain facility to enter school name, user name, password and a mobile phone number. It should also contain buttons for saving and clearing the data entered. Ensure that the data is entered in all the text boxes and the text box for mobile phone number contains only numbers. Write JavaScript for this validation.

Level 3

1. Design a web page about atmosphere as shown below. It should contain features like background colour/image, headings and stylish fonts, images, etc.



2. Design a web page showing tourist destinations in Kerala as shown below:

Department of Tourism

Government of Kerala

Tourist Destinations in Kerala

1. Beaches
   a. Kovalam
   b. Muzhuppilangad
   c. Kappad
2. Hill Stations
   i. Munnar
   ii. Wayanad
   iii. Gavi
3. Wildlife
   a. Iravikulam
   b. Muthanga
   c. Kadalundi

3. Design an attractive web page about India. Provide details about the Indian freedom movement at the lower part of the web page. Also create another web page containing the list of states in India, named

'states.htm'. Create two links in the main web page – one to link to the bottom of the web page where details about freedom movement is given and another to the web page 'states.htm'.

4. Design the following table using HTML.

Class	Strength		
	Science	Commerce	Humanities
Plus One	49	50	48
Plus Two	50	50	49

5. Design the following catalogue of products for an IT shop using HTML.

Laser Printer	
	Model: Canon LBP 2900 Price: Rs. 6500
Scanner	
	Model: HP Scanjet G2410 Price: Rs. 3800
Monitor	
	Model: LG 22MP67VQ Price: Rs. 10500
Keyboard & Mouse Combo	
	Model: Logitech MK200 USB Price: Rs. 950

6. Design an HTML form to accept the Curriculum Vitae of a job applicant. The form should provide facility to accept name, address in multiple lines, gender using option button, nationality using a list box and hobbies using check boxes. The form should provide buttons to save and clear the contents of text boxes.

7. Design three web pages - one containing a heading displaying your school name, named 'head.htm'; second web page containing the list of teachers, named 'teachers.htm'; and the third webpage about your school, named 'school.htm'. Create a frame dividing the browser window into two sections horizontally in the ratio 15:85. The top frame should display the web page 'head.htm'. The bottom frame has to be divided into 2 frames vertically in the ratio 30:70. The left part should display the web page 'teachers.htm' and the right part should display the web page 'school.htm'.
8. Develop a web page to find the capital of Indian States. The page should contain a dropdown list from which the user can select a state. On clicking the show button, the web page should display the capital of the state in another text box. Write the required JavaScript.
9. Develop a web page with two text boxes and a button labelled "Show". The user can enter a number in the first text box. One clicking the button, the second text box should display whether the number is prime or not. Write the required JavaScript.
10. Develop a web page containing a two text boxes for entering User name and Password. There should be a login button also. On clicking the login button, it should check the followings:
    a) The user name should contain at least 10 characters and all the letters should be in lower cases.
    b) The password should contain at least 7 characters and should contain at least one lower case letter, one upper case letter and a digit.

SQL (5 x 3 = 15 Questions)

Level 1

1. Create a table Student with the following fields and insert at least 5 records into the table except for the column Total.

Roll_Number	Integer	Primary key
Name	Varchar (25)	
Batch	Varchar (15)	
Mark1	Integer	
Mark2	Integer	
Mark3	Integer	
Total	Integer	

   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

   b. List the details of students in Commerce batch.

   c. Display the name and total marks of students who are failed (Total < 90).

   d. Display the name and batch of those students who scored 90 or more in Mark1 and Mark2.

   e. Delete the student who scored below 30 in Mark3.

2. Create a table Employee with the following fields and insert at least 5 records into the table except the column Gross_pay and DA.

Emp_code	Integer	Primary key
Emp_name	Varchar (20)	
Designation	Varchar (25)	
Department	Varchar (25)	
Basic	Decimal (10,2)	
DA	Decimal (10,2)	
Gross_pay	Decimal (10,2)	

   a) Update DA with 75% of Basic.

   b) Display the details of employees in Purchase, Sales and HR departments.

   c) Update the Gross_pay with the sum of Basic and DA.

   d) Display the details of employee with gross pay below 10000.

   e) Delete all the clerks from the table.

3. Create a table *Stock*, which stores daily sales of items in a shop, with the following fields and insert at least 10 records into the table.

Item_code	Integer	Primary key
Item_name	Varchar (20)	
Manufacturer_Code	Varchar (5)	
Qty	Integer	
Unit_Price	Decimal (10,2)	
Exp_Date	Date	

   a. Display the details of items which expire on 31/3/2016.
   b. Display the item names with stock zero.
   c. Remove the items which expire on 31/12/2015.
   d. Increase the unit price of all items by 10%.
   e. List the items manufactured by "ABC & Co" with quantity above 100.

4. Create a table Book with the following fields and insert at least 5 records into the table.

Book_ID	Integer	Primary key
Book_Name	Varchar (20)	
Author_Name	Varchar (25)	
Pub_Name	Varchar (25)	
Price	Decimal (10,2)	

   a. Display the details of books with price 100 or more.
   b. Display the Name of all the books published by SCERT.
   c. Increase the price of the books by 10% which are published by SCERT.
   d. List the details of books with the title containing the word "Programming" at the end.
   e. Remove all the books written by "Balaguruswamy".

5. Create a table Bank with the following fields and insert at least 5 records into the table.

Acc_No	Integer	Primary key
Acc_Name	Varchar (20)	
Branch_Name	Varchar (25)	
Acc_ Type	Varchar (10)	
Amount	Decimal (10,2)	

a. Display the account details of "Savings Account" in Kodungallur branch.
b. Change the branch name "Trivandrum" to "Thiruvananthapuram".
c. Display the details of customers in Thiruvananthapuram, Ernakulam and Kozhikode.
d. List the details of customers in Thrissur branch having a minimum balance of Rs. 5000.
e. Delete all the current accounts in Mahe branch.

Level 2

1. Use Student table and write SQL statements for the following:
   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.
   b. List the details of students in Science batch in the ascending order of their names.
   c. Display the highest Total in Humanities batch.
   d. List the details of students who passed (Subject minimum is 30 and aggregate minimum is 90) the course.
   e. Delete the students of Commerce batch who failed in any one subject.
2. Use Employee table and write SQL statements for the following:
   a. Update DA with 75% of Basic for Managers and 80% Basic for all other employees.
   b. Update the Gross_pay with the sum of Basic and DA
   c. Display the details of employees in Purchase, Sales and HR departments in descending order of Gross pay.
   d. Find the number of employees in Accounts department.
   e. Delete the details of clerks whose Gross pay is below 5000.
3. Use Stock table and write SQL statements for the following:
   a. Display the details of items which expire after 31/3/2016 in the order of expiry date.
   b. Find the number of items manufactured by the company "SATA".
   c. Remove the items which expire between 31/12/2015 and 01/06/2016.
   d. Add a new column named Reorder in the table to store the reorder level of items.

e. Update the column Reorder with value obtained by deducting 10% of the current stock.

4. Use Book table and write SQL statements for the following:
   a. Insert a column named Number_of_pages into the table.
   b. Display the details of books of the same author together in the descending order of the price published by NCERT.
   c. Display the average price of books published by "BPB" and written by "Robert Lafore".
   d. List the details of books published by "PHI" that contains the word "Programming" in the title.
   e. Remove all the books written by "Balaguruswamy", "Kanetkar" or "Robert Lafore".
5. Use Bank table and write SQL statements for the following:
   a. Display the branch-wise details of account holders in the ascending order of the amount.
   b. Insert a new column named Minimum_Amount into the table with default value 1000.
   c. Update the Minimum_Amount column with the value 1000 for the customers in branches other than Alappuzha and Malappuram.
   d. Find the number of customers who do not have the minimum amount 1000.
   e. Remove the details of SB accounts from Thiruvananthapuram branch who have zero (0) balance in their account.

Level 3

1. Use Student table and write SQL statements for the following:
   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.
   b. Add a new column Average to the table Student.
   c. Update the column Average with average marks.
   d. List the details of student who has the highest Total.
   e. Delete the students of Commerce batch who failed in any two subjects.
2. Use Employee table and write SQL statements for the following:
   a. Update DA with 75% of Basic for Managers and 80% of Basic for all other employees.

b. Update the Gross_pay with the sum of Basic and DA.
c. Display name, department and gross pay of employees in Purchase, Sales and HR departments. The employees in the same department should appear together in the ascending order of Gross pay.
d. Find the number of employees in each department where there is minimum of 5 employees.
e. Show the details of employee with Gross pay greater than the average gross pay.

3. Use Stock table and write SQL statements for the following:
   a. Display the number of items manufactured by each company which expire after 31/3/2016.
   b. Add a new column Reorder in the table to store the reorder level of items.
   c. Update the column Reorder with value obtained by deducting 10% of the current stock.
   d. Display the details of items which expire at last.
   e. Remove the items which expire before 01/03/2015 or that are manufactured by "ABC & Co".

4. Use Book table and write SQL statements for the following:
   a. Create a view containing the details of books published by SCERT.
   b. Display the average price of books published by each publisher.
   c. Display the details of book with the highest price.
   d. Display the publisher and number of books of each publisher in the descending order of the count.
   e. Display the title, current price and the price after a discount of 10% in the alphabetical order of book title.

5. Use Bank table and write SQL statements for the following:
   a. Display the number and total amount of all the account holders in each branch.
   b. Display the number of Savings Bank account holders in each branch.
   c. Display the details of customers with the lowest balance amount.
   d. Display the branch and number of Current accounts in the descending order of the count.
   e. Display the details of customers in Kozhikode branch whose amount is greater the average amount.

APPENDIX – 2

Sample List of Questions for Lab Work
Computer Applications (Commerce)

Programming in C++ – 10 Qns. (L1 – 5, L2 – 3, L3 – 2)

1. Input a number and check whether it is positive, negative or zero. (L1)
2. Input the principal amount, type of account (C for current a/c or S for SB a/c) and number of years, and display the amount of interest. Rate of interest for current a/c is 8.5% and that of SB a/c is 6.5%. (L2)
3. Find the area of a rectangle, a circle and a triangle. Use switch statement for selecting an option from a menu. (L3)
4. Find the sum of the digits of an integer number. (L1)
5. Display the multiplication table of a number having 12 rows. (L1)
6. Find the sum of the squares of the first N natural numbers without using any formula. (L1)
7. Find the length of a string without using strlen() function. (L1)
8. Input the price of a set of higher secondary textbooks and find the highest and lowest prices. (L2)
9. Define separate functions to return simple interest and compound interest by accepting principle amount, time and rate of interest as arguments. (L3)
10. Define a function to swap two variables. Using this function, interchange the values of three variables. E.g. A →B →C→A. (L2)

Web Applications – 10 Qns. (L1 – 5, L2 – 3, L3 – 2)

1. Design a simple and attractive webpage for Kerala Tourism. It should contain features like background colour/image, headings, text formatting and font tags, images, etc. (L1)
2. Design a webpage as shown below using appropriate list tags. (L2)

List of Nobel Laureates from India

Rabindra Nath Tagore

He was the first to get Nobel Prize from India. He received prize in literature in 1921. He got Nobel Prize for his collection of poems "Gitanjali".

C V Raman

He got Nobel for Physics in 1930. He received Nobel Prize for his contribution called Raman Effect.

Mother Teresa

Mother Teresa who founded Missionaries of Charity which is active in more than 100 countries received Nobel Prize in 1979.

Amartya Sen

Amartya Sen was awarded Nobel Prize in 1998 in Economics. He has made contributions to welfare economics, social choice theory etc.

Kailash Satyarthi

He is a child right activist who founded "Bachpan Bachao Andolan" in 1980. He shared Nobel prize for peace in 2014.

3. Design a simple webpage about your school. Create another webpage named address.htm containing the school address. Give links from school page to address.htm. (L2)

4. Design the following table using HTML.

Class	Strength		
	Science	Commerce	Humanities
Plus One	49	50	48
Plus Two	50	50	49

5. Design a web page containing a table as shown below: (L1)

Speed Limits in Kerala

Vehicles	Near School (In Km/hour)	Within Corporation/ Municipality (In Km/hour)	In other roads (In Km/hour)
Motor Cycle	25	40	50
Motor Car	25	40	70
Light motor vehicles	25	40	60
Heavy motor vehicles	15	35	60

6. Design a webpage containing frames that divide the screen vertically in the ratio 50:50. Design two web pages – one containing the list of Indian cricket team members and the second page containing a list of Indian football team members. (L2)

7. A webpage should contain one text box for entering a text. There should be two buttons labelled "To Upper Case" and "To Lower Case". On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations. (L1)

8. Develop a webpage to find the capital of Indian States. The page should contain a dropdown list from which the user can select a state. On clicking the show button, the web page should display the capital of the state in another text box. Write the required JavaScript. (L3)

9. Develop a webpage with two text boxes and a button labelled "Show". The user can enter a number in the first text box. On clicking the button, the second text box should display the sum of all numbers up to the given number. Write the required JavaScript. (L1)

10. A webpage should contain one text box for entering a text. There should be two buttons labelled "To Upper Case" and "To Lower Case". On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations. (L1)

SQL – 5 Qns. (L1 – 2, L2 – 2, L3 – 1)

1. Create a table Student with the following fields and insert at least 5 records into the table except for the column Total. (L1)

Roll_Number	Integer	Primary key
Name	Varchar (25)	
Batch	Varchar (15)	
Mark1	Integer	
Mark2	Integer	
Mark3	Integer	
Total	Integer	

   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

   b. List the details of students in Commerce batch.

   c. Display the name and total marks of students who are failed (Total < 90).

d. Display the name and batch of those students who scored 90 or more in Mark1 and Mark2.

e. Delete the student who scored below 30 in Mark3.

2. Create a table Employee with the following fields and insert at least 5 records into the table except the column Gross_pay and DA. (L1)

Emp_code	Integer	Primary key
Emp_name	Varchar (20)	
Designation	Varchar (25)	
Department	Varchar (25)	
Basic	Decimal (10,2)	
DA	Decimal (10,2)	
Gross_pay	Decimal (10,2)	

a) Update DA with 75% of Basic.

b) Display the details of employees in Purchase, Sales and HR departments.

c) Update the Gross_pay with the sum of Basic and DA.

d) Display the details of employee with gross pay below 10000.

e) Delete all the clerks from the table.

3. Create a table *Stock*, which stores daily sales of items in a shop, with the following fields and insert at least 10 records into the table. (L2)

Item_code	Integer	Primary key
Item_name	Varchar (20)	
Manufacturer_Code	Varchar (5)	
Qty	Integer	
Unit_Price	Decimal (10,2)	
Exp_Date	Date	

a. Display the details of items which expire on 31/3/2016.

b. Display the item names with stock zero.

c. Remove the items which expire on 31/12/2015.

d. Increase the unit price of all items by 10%.

e. List the items manufactured by "ABC & Co" with quantity above 100.

4. Create a table Book with the following fields and insert at least 5 records into the table. (L3)

Book_ID	Integer	Primary key
Book_Name	Varchar (20)	
Author_Name	Varchar (25)	
Pub_Name	Varchar (25)	
Price	Decimal (10,2)	

   a. Display the details of books with price 100 or more.
   b. Display the Name of all the books published by SCERT.
   c. Increase the price of the books by 10% which are published by SCERT.
   d. List the details of books with the title containing the word "Programming" at the end.
   e. Remove all the books written by "Balaguruswamy".

5. Create a table Bank with the following fields and insert at least 5 records into the table. (L2)

Acc_No	Integer	Primary key
Acc_Name	Varchar (20)	
Branch_Name	Varchar (25)	
Acc_ Type	Varchar (10)	
Amount	Decimal (10,2)	

   a. Display the account details of "Savings Account" in Kodungallur branch.
   b. Change the branch name "Trivandrum" to "Thiruvananthapuram".
   c. Display the details of customers in Thiruvananthapuram, Ernakulam and Kozhikode.
   d. List the details of customers in Thrissur branch having a minimum balance of Rs. 5000.
   e. Delete all the current accounts in Mahe branch.