

## Computer Science &amp; Information Technology (Focus Area- 2021-22)

Chapter	Focus Area
1. Structures and Pointers	Concept of structure and example, comparison b/w structure and array, Definition of pointers, Use of & and * operators, static V/S dynamic memory allocation, new and delete operators
2. Concept of Object oriented programming	POP V/S OOP, Concepts of OOPs, class, private, public, protected members, member function definition ( simple class programs(student,stock,box-area,volume) , inheritance – single , multiple,multilevel, hierarchical, hybrid(definition & diagram) Polymorphism (compile time only) function overloading definition , operator overloading definition, list of operators that cannot be overloaded
3. File Streams and opening modes	Definition of file and stream, ifstream, ofstream, fstream definitions. Opening and closing file, file modes -ios::in, ios::out, ios::binary, ios::app,ios::ate, use of seekg(),seekp(),tellg() and tellp() functions, comparison of text and binary files
4. Web technology	Static and Dynamic web pages, comparison of Client side and Server side scripts, important port addresses(http,ftp, smtp), structure of HTML page,tag, attribute, Container tag and empty tag Common attributes of BODY tag, Use of important tags(Headings   <P><HR>, text formatting tags, <MARQUEE>,<IMG>) only the essential 2 or 3 attributes of <IMG> tag. Two scripting languages- javascript, vbscript
5. Database Management System	Advantages of DBMS, Components of DBMS, Types of users, RDBMS terminologies, Relational operations(select,project,union, intersection)
6 Structured query Language	SQL components, sql data types, DDL(Create table, drop table),Constraints, DML(select, delete, update), where and order by clause <b>SQL queries are to be avoided</b>
7. Advances in computing	Serial V/S Parallel computing, Cloud computing and three services, applications of computational intelligence- listing only
8. ICT and Society	Applications of ICT- e-Learning, e-Business, e-Governance (Definition,benefits and challenges of each) Cyber crimes against individuals
9. Python	Data types,operators,(arithmetic, relational, logical,assignment) # symbol, if. If else. If elif, while , for, list V/s tuple, dictionary, simple pgms- sum of two numbers, largest among 2 numbers, print first 10 numbers

## PART III - ELECTRONIC SYSTEMS (OPTIONAL)

### FOCUS AREA - MARCH 2022

No	Chapter	Focus Area
1	Wave shaping circuits	<b>Diode clipper</b> positive parallel clipper- positive biased and negative biased clipper (circuit diagrams with operation and waveforms) negative parallel clipper- positive biased and negative biased clipper (circuit diagrams with operation and waveforms) <b>Diode clamper circuit</b> Positive clamper (working & circuit of +ve clamper) Negative clamper (working & circuit of -ve clamper) Biased clamper <b>RC integrator &amp; differentiator</b> (circuit diagrams with operation & wave forms for Square wave input)
2	Oscillators	Basic concepts of positive feedback and negative feedback <b>Barkhausen Criteria</b> - Definition Oscillator circuits <b>RC Phase Shift Oscillator</b> : Circuits diagrams with Operation, Waveforms, and expression for frequency of oscillation <b>Crystal Oscillator</b> - Advantages only
3	Integrated circuits	<b>Merits of ICs</b> <b>Fabrication Techniques</b> (steps only-Crystal growth-Epitaxial growth-Oxidation- Diffusion)
4	Operational Amplifiers & Linear ICs	Introduction to OP AMP IC 741 Ideal op amp characteristics Definition and typical value of CMRR <b>Op amp configurations</b> Inverting and Non- inverting amplifiers (Circuits diagrams with Operation, Waveforms, and expression for Voltage Gain) <b>Astable multivibrator using 555</b> (Circuit diagram, Working and expression for period of oscillation)
5	Power supply	Linear and switched type power supply (Comparison only) Block diagram of linear power supply Simple block diagram and uses of SMPS Simple block diagram and explanation of inverter Simple block diagram and working of online



		UPS
6	Digital electronics	Combinational and Sequential Logic Definition, Examples and comparison Multiplexer (Definition, uses) <b>4:1 MUX</b> (circuit and truth table) Demultiplexer (definition and uses)
6	Digital electronics	<b>Flip flops</b> SR, JK using NAND only, Block diagram of JKMS, D& T <b>Counters</b> Comparison of Synchronous counter and asynchronous counter Decade counter
7	Audio - Video systems	<b>PA System</b> (Block diagram and explanation) <b>Loudspeaker</b> - Moving Coil type Constructional Details and Working <b>Microphone</b> -Constructional Details of moving coil microphone <b>TV transmission and reception</b> (Block diagram) Basic Concepts of Scanning
8	Modern communication system	<b>Cellular Phone</b> Basic Concepts of Cellular telephone (Basic diagram and Explanation only) Generation of mobile technology (Basic concepts only) GSM: Basic concepts only CDMA Basic concepts only Different Operating Systems used in Mobile Phones. Satellite Communication: - Basic Concepts of Satellite Communication Systems Concept of radar ( block diagram)
9	Optical fiber Communication	<b>Optical fiber</b> - Advantages Total internal reflection critical angle <b>Types of optical fiber</b> Step index Graded index
10	Applications of Electronics	Embedded system (Basic concepts) Comparison between Microprocessor & Microcontroller ( block diagrams) Word length Diagnostic equipment- block diagram of ECG Imaging equipment - Applications of Ultrasound Scanner, CT Scanners and MRI Scanner