Model Question Paper-II with effect from 2021 (CBCS Scheme)

USN

First/Second Semester B.E Degree Examination
Basic Electronics & Communication Engineering

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1 (Power Supplies, Amplifiers, Operational amplifiers, Oscillators)			Marks
Q.01	a	Explain the working of Bi-phase Full wave rectifier circuit with neat diagram.	8
	b	List and describe the main types of amplifiers.	7
	c	Describe the working of a single stage astable oscillator using an opamp.	5
		OR	
Q.02	a	Explain the operation of a simple shunt Zener voltage regulator.	7
	b	Sketch the circuit of each of the following based on the use of operational amplifiers (a) comparator (b) a differentiator (c) an integrator (d) Inverting Amplifier.	8
	c	With circuit diagram explain the following: Voltage Doubler, Voltage Tripler	5
Module-2 (Logic Circuits, Data representation, Shift registers, Counters)			
Q. 03	a	Design a 3-to-8 Decoder and show its implementation using basic gates.	8
	b	Construct a logic circuit that will produce a Logic 1 output whenever two or more of its inputs are at Logic 1.	7
	c	With the help of truth table explain full adder using logic gates.	5
		OR	
Q.04	a	Explain Input and output states for a J-K bistable using clocked operation.	8
	b	With the help of a neat diagram explain the 4-bit shift register operation and types.	7
	c	With a neat block diagram explain the arrangement of a microcontroller system with typical inputs and outputs.	5
Module-3 (Embedded Systems, Sensors and Interfacing, Actuators, Communication Interface)			
Q. 05	a	Compare Embedded systems and general computing systems. Also provide major application areas of Embedded Systems.	8
	b	Explain the different configurations of 7-segment LED Display.	6
	c	Describe the matrix keyboard interfacing and UART.	6
		OR	

Q. 06	a	Define 'sensors' and give its classification with examples.	6
	b	With relevant diagrams explain the operation of Relay, push button and Piezo-buzzer.	8
	c	Explain the following external communication interfaces: USB, wi-fi	6
Module-4 (Analog and Digital Communication)			
Q. 07	a	Define and explain SNR, Noise Figure, channel types, amplitude modulation.	8
	b	Present the architecture of a wireless communication transmitter and its modulation scheme QPSK with waveforms and constellation diagrams.	6
	c	Discuss the various Multiple Access Techniques used in cellular network.	6
OR			
Q. 08	a	Describe the classification of RF (Radio Frequency) spectrum with applications in communications systems.	8
	b	Explain different types of radio wave propagation with a neat diagram.	6
	c	Write short notes on: Forward Error Correction, Automatic Repeat Request	6
Module-5 (Cellular Wireless Networks, Wireless Network Topologies, Satellite Communication, Optical Fiber Communication, Microwave Communication)			
Q. 09	a	Define the terms cell & cluster in a cellular system and explain the cellular concept in wireless mobile networks.	6
	b	Discuss 3G technology with specific emphasis on CDMA.	6
	c	Bring out the features of FM transmitter, FM receiver and repeaters in microwave communications.	8
OR			
Q. 10	a	Define the following terms with respect to GSM system: Mobile Station (MS), Base Station Subsystem (BSS), Network & Switching System (NSS)	6
	b	With the help of a block diagram explain the generalized configuration of a fiber – optic communication system.	8
	c	Based on orbits, discuss the different types of satellites.	6