Model Question Paper-I/II with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

First/Second Semester B.E. Degree Examination

Basic Electronics

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. Missing data may be suitably assumed.

		Module -1	Bloom's Taxonomy Level	Marks
Q.01	a	Explain the forward and reverse characteristics of a silicon diode	L1	8
	b	Describe the working of a capacitor filter for a half wave rectifier with a neat circuit diagram and necessary waveforms.	L2	8
	c	Determine the peak output voltage and current for a bridge rectifier circuit when the secondary RMS voltage is 30V and the diode forward drop is 0.7V.	L3	4
		OR		
Q.02	a	Describe the working of full wave rectifier with a neat circuit diagram and necessary waveforms.	L1	8
	b	Explain how a Zener diode can be used as voltage regulator by considering the no load and loaded condition.	L2	8
	c	A diode with VF=0.7V is connected as a half wave rectifier. The load resistance is 500Ω and the secondary RMS voltage is 22V. Determine the peak output voltage and the peak load current.	L3	4
		Module-2		
Q. 03	a	Explain the output characteristics of a transistor in common emitter configuration.	L1	8
	b	Explain the working of an n-channel JFET.	L1	8
	c	With respect to BJT, describe the concept of obtaining the DC load line.	L2	4
		OR		
Q.04	a	Explain the Enhancement type MOSFET along with the drain characteristics.	L1	8
	b	Explain the common base output characteristics.	L1	8
	c	Describe how a transistor can be used a voltage amplifier.	L2	4
		Module-3		
Q. 05	a	With respect to an op-amp explain the following: I. Input offset voltage II. Slew rate	L1	8
	b	Describe a summing amplifier using an op-amp in an inverting configuration with three inputs.	L2	8
	c	An inverting amplifier using op-amp has a feedback resistor of 10KΩ and one input resistor of 1KΩ. Calculate the gain of the op-amp and the output voltage if it supplied with an input 0f 0.5V.	L3	4
		OR		

Q. 06	a	Describe the block diagram representation of an op-amp. Also describe its operational behavior with an equivalent circuit.	L1	8
	b	Describe an integrating amplifier using an op-amp in an inverting configuration.	L2	8
	c	Develop a summer circuit using op-amp to get the following output voltage $V_o = -(2V_1 + 2V_2)$	L3	4
Module-4				
Q. 07	a	Convert the following: i. $(110.1101)_2=(?)_{10}$ ii. $(847.951)_{10}=(?)_8$ iii. $(CAD.BF)_{16}=(?)_{10}$	L3	6
	b	Express the Boolean function F=A+BC in a sum of minterms	L3	6
	c	Describe how NANd and NOR gates can be used as universal gates.	L2	8
OR				
Q. 08	a	Simplify the following: i. $Y = AB + \bar{A}C + BC$ ii. $Y = (A + \bar{B} + \bar{B})(A + \bar{B} + C)$ iii. $Y = C(B + C)(A + B + C)$	L3	6
	b	Express the Boolean function $F = XY + \bar{X}Z$ in a product of maxterms	L3	6
	c	Describe the working of the full adder using basic gates.	L2	8
Module-5				
Q. 09	a	Explain the working of the potentiometric resistive transducer.	L1	8
	b	Write a note on photodiodes.	L1	6
	c	Explain the various blocks involved in an electrical communication system.	L1	6
OR				
Q. 10	a	Explain the working of Linear Variable Differential Transducer.	L1	8
	b	Write a note on piezoelectric transducer.	L1	6
	c	What is modulation? Describe the need of modulation in communication systems	L1	6