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EPBEE203

Second Semester B.E. Degree Examination, July 2025
BASIC ELECTRONICS FOR EEE STREAM

TIME:3 hrs. Max.Marks:100

Note: 1. Answer any FIVE full questions, choosing ONE question from each MODULE
2. M: Marks, L: Bloom's level,C: Course outcomes.

		Module-1	M	L	C
Q.1	a	Explain the Forward and Reverse Characteristic of Semiconductor Diode.	8	L2	CO1
	b	Describe the working of a capacitor filter for a half wave rectifier with a neat circuit diagram and necessary waveforms.	8	L2	CO1
	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.	4	L3	CO1
		OR			
Q.2	a	Explain RC π filter	8	L2	CO1
	b	Explain how a Zener diode can be used as voltage regulator by considering the no load and loaded condition.	8	L2	CO1
	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.	4	L3	CO1
		Module–2			
Q.3	a	Explain the output characteristics of a transistor in common emitter configuration.	8	L1	CO2
	b	Explain BJT Current Amplification for increasing and decreasing IB Levels.	8	L2	CO2
	c	With respect to BJT, describe the concept of obtaining the DC load line.	4	L2	CO2
		OR			
Q.4	a	Explain the operation of enhancement MOSFET.	8	L2	CO2
	b	Explain the working of n channel JFET.	8	L2	CO2
	c	Describe how a transistor can be used a voltage amplifier.	4	L2	CO2
		Module–3			
Q.5	a	With respect to an op-amp explain the following: I.Input offset voltage II. Slew rate	8	L1	CO3
	b	Explain OpAmp as an integrator circuit with an input and output waveform using square wave as input.	8	L2	CO3
	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.	4	L3	CO3

		OR			
Q.6	**a**	Describe the block diagram representation of an op-amp. Also describe its operational behavior with an equivalent circuit	**8**	**L1**	**CO3**
	b	Explain working of a Differential Amplifier	**6**	**L2**	**CO3**
	c	Describe a summing amplifier using an op-amp in an inverting configuration with three inputs.	**6**	**L3**	**CO3**
		Module–4			
Q.7	**a**	Describe how NAND and NOR gates can be used as universal gates.	**8**	**L2**	**CO4**
	b	Simplify the following: i. $Y = AB + \overline{AC} + BC$ ii. $Y = (A + \overline{B} + \overline{B})(A + \overline{B} + C)$	**6**	**L3**	**CO4**
	c	Express the Boolean function $F = XY + \overline{XZ}$ in a product of maxterms	**6**	**L3**	**CO4**
		OR			
Q.8	**a**	Convert the following: i. (110.1101)2=(?)10 ii. (847.951)10=(?)8 iii. (CAD.BF)16=(?)10	**6**	**L3**	**CO4**
	b	Simplify the Boolean function to minimum number of literals (xy+ x'y+yz) (x'y+ x(y+z) + y'z')	**6**	**L3**	**CO4**
	c	Describe the working of the full adder using basic gates.	**8**	**L2**	**CO4**
		Module–5			
Q.9	**a**	Explain the working principle and applications of Piezoelectric Transducer	**8**	**L2**	**CO5**
	b	What is noise? Explain the term Channel Noise and its effects.	**6**	**L2**	**CO5**
	c	What is modulation? Describe the need of modulation in communication systems	**6**	**L1**	**CO5**
		OR			
Q.10	**a**	Explain the working of Linear Variable Differential Transducer.	**8**	**L2**	**CO5**
	b	Explain the working of the potentiometric resistive transducer.	**6**	**L1**	**CO5**
	c	Explain the various blocks involved in an electrical communication system.	**6**	**L1**	**CO5**

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