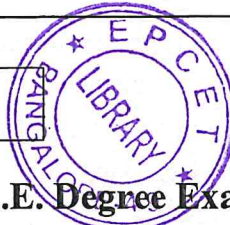


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**EPBEE203**

**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 $\pi$ 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 $V_F=0.7V$ is connected as a half wave rectifier. The load resistance is $500\Omega$ 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 $I_B$ 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 $10K\Omega$ and one input resistor of $1K\Omega$ . Calculate the gain of the op-amp and the output voltage if it supplied with an input Of 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. $Y = AB + \bar{A}C + BC$ ii. $Y = (A + \bar{B} + \bar{C})(A + \bar{B} + C)$	6	L3	CO4
	c	Express the Boolean function $F = XY + \bar{X}Z$ 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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