BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : V/ADD**
BRANCH: EEE **SESSION : MO/2025**

SUBJECT: EE357 ELECTRONIC DEVICES AND ANALOG CIRCUITS

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	What are the capacitive effects on a p-n junction? Explain diffusion capacitance of a p-n junction diode with expression.	[2]	1,2	2
Q.1(b)	A diode has a saturation current Is=10^{-14} A. Calculate the voltage across the diode, if the diode current is 5 mA. Assume room temperature and ideality factor η =1.	[3]	1,2	3
Q.2(a)	Derive the ripple factor of a full wave rectifier.	[2]	1,2	2
Q.2(b)	A half wave rectifier supplies 100mA dc to a load of a 250 Ω load. Find dc output voltage, PIV rating of a diode and rms voltage for the transformer supplying the rectifier.	[3]	1,2	3
Q.3(a)	Describe the applications of an LED.	[2]	1	2
Q.3(b)	Explain the working of a Zener diode along with characteristics. Also, describe how is it used for voltage regulation.	[3]	1	2
Q.4(a)	What is Early effect in a BJT.	[2]	1,2	1
Q.4(b)	Explain the input and output characteristics of a CB configuration specifying the different operating regions.	[3]	1,2	2
Q.5(a)	Illustrate the advantages of FET over BJT.	[2]	1	3
Q.5(b)	Explain the working of n-channel depletion MOSFET and draw its characteristics.	[3]	1,2	2

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