Code No: R2021041 **R20** SET - 1

II B. Tech I Semester Supplementary Examinations, July - 2022
ELECTRONIC DEVICES AND CIRCUITS
(Com to ECE, EIE, ECT)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1	a)	Explain about Hall effect. Derive an expression for Hall voltage. What are the applications of Hall effect?	[9M]
	b)	Explain in detail about the extrinsic and intrinsic semiconductors.	[5M]
		Or	
2	a)	Derive an expression for total current in a semiconductor.	[7M]
	b)	Draw the Energy band diagram of PN diode and also Explain.	[7M]
3	a)	Explain the construction and working of Photo diode.	[7M]
	b)	Explain construction and operation of full wave rectifier with L section filter?	[7M]
		Or	
4	a)	Explain construction and operation of a bridge rectifier and find PIV, RMS current, Rectifier efficiency & Ripple factor.	[7M]
	b)	Discuss how full wave rectification differs from half wave rectification.	[7M]
5	a)	With neat sketch explain the operation & Drain, Gate characteristics of Depletion MOSFET.	[7M]
	b)	Explain about punch through effect?	[7M]
		Or	
6	a)	Explain how the transistor acts as an amplifier?	[7M]
	b)	Compare & contrast BJT & FET.	[7M]
7	a)	Explain the need for biasing in electronic circuits. What are the factors affecting the stability factor.	[7M]
	b)	Derive the equation for stability factor for fixed bias.	[7M]
		Or	
8	a)	Determine the quiescent currents and the collector to emitter voltage for a Ge transistor with $\beta = 50$ in the self-biasing arrangements. The circuit component values are $V_{CC} = 20V$, RC = 2kΩ, Re = 0.1 kΩ, R1 = 100 kΩ and R2 = 5 kΩ. Find the stability factor S.	[7M]
	b)	Explain in detail about Thermal Runaway & Thermal Stability concepts.	[7M]
9		Derive the expressions for voltage gain, current gain, input impedance, output impedance, with respect to source and current gain W.r.to source for generalized transistor amplifier at low frequencies.	[14M]
		Or	
10	a)	Give the comparison of CE, CB and CC amplifiers with respect to voltage gain, current gain, input impedance and output impedance.	[7M]
	b)	Compare CS, CD JFET amplifiers.	[7M]
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