C **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: R2405

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Second Semester

Electronics and Communication Engineering

R21UEC205- ELECTRONIC DEVICES

(Regulations R2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (5 x 1 = 5 Marks)

1. In N-type semiconductor, the current flow is due to the movement of CO1 -U

   a) holes b) electrons c) both holes &electrons d) none of above

2. In a BJT, if $\beta = 100$, then $\alpha =$ CO2 -App

   a) 99 b) 0.99 c) 1.0 (d) 1.01

3. The SI Units of the Process trans conductance Parameter is CO1-U

   a) V2/A b) A/V2 c) V/A d) A/V

4. During reverse bias, a small current develops known as _____. CO1-U

   (a) Forward current (b) Reverse current

   (c) Reverse Saturation Current (d) Leakage Current

5. In a BJT, if $\alpha = 0.98$, then $\beta =$ CO1 -U

   a) 49 b) 98 c) 47 d) 100

PART – B (5 x 3= 15 Marks)

6. How to increase the conductivity of semiconductor? CO3 -App
7. Differentiate CE and CB by their input characteristics CO1 -App
8. Compare N channel JFET and P channel JFET CO1- U
9. Give some applications of photo diodes CO1- U
10. Give the condition for biasing arrangement of an NPN transistor to operate in the active region CO1- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Explain the working of PN junction diode under different bias conditions	CO1- U	(16)
		Or		
	(b)	Elaborate the functions of UJT and their characteristics with suitable application.	CO1- U	(16)
12.	(a)	Analyze impedance, admittance and gain of transistors to design amplifier with suitable configuration.	CO4-An	(16)
		Or		
	(b)	Analyze the current amplification factors of CB, CC and CE configuration and give the relation between α,β and also derive the relation between α,β and ϒ.	CO4-An	(16)
13.	(a)	Explain the construction, working and operating characteristics of N-channel JFET with relevant diagrams.	CO1- U	(16)
		Or		
	(b)	Derive the expression for depletion N channel MOSFET with suitable characteristic parameters	CO1- U	(16)
14.	(a)	Design a half wave rectifier using PN diode and calculate ripple factor and efficiency	CO1- U	(16)
		Or		
	(b)	Compute the Vdc, Vrms, efficiency and peak factor of bridge rectifier.	CO1-U	(16)
15.	(a)	(i) The common base DC current gain of the transistor 0.967.If the emitter current is 10mA.What is the value of base current. (ii) A transistor has I_E=10mA,α=0.98.Determine the value of IC,IB	CO3-App	(16)
		Or		
	(b)	(i) Determine the value of I_C and I_B for the transistor circuit of I_E=12mA,β=100 (ii) A current gain of transistor in CE mode is 49.Calculate its common base current gain. Find the base current when the emitter current is 3Ma	CO3-App	(16)