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Question Paper Code: R2405

B.E. / B.Tech. DEGREE EXAMINATION, APRIL/ MAY 2025

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. During reverse bias, a small current develops known as _____ CO1 -U
(a) Forward current (b) Reverse current
(c) Reverse Saturation Current (d) Leakage Current
2. The input resistance is given by _____ CO1 U
(a) $\Delta V_{CE}/\Delta I_B$ (b) $\Delta V_{BE}/\Delta I_B$ (c) $\Delta V_{BE}/\Delta I_C$ (d) $\Delta V_{BE}/\Delta I_E$
3. The pinch off voltage of JFET is 5v. What is its cut off voltage CO2-App
(a) 2.5V (b) 3V (c) 4V (d) 5V
4. The application of a CE configured transistor is _____ CO1-U
(a) voltage multiplier (b) Amplifier
(c) rectification (d) impedance matching
5. If the MOSFET is to be used as a switch then it must operate in CO1-U
(a) Cut-off region (b) Triode region (c) Saturation region (d) Both

PART – B (5 x 3= 15 Marks)

6. Compare LED and LASER CO1 U
7. Illustrate the need for biasing in the transistor. CO1-U
8. What is transconductance in JFET? CO1 U
9. Give the condition for biasing arrangement of an NPN transistor to operate in the active region CO1 U
10. List out the applications of MOSFET. CO1 U

PART – C (5 x 16= 80 Marks)

11. (a) Design a half wave rectifier using PN diode and calculate ripple factor and efficiency CO1-U (16)
- Or
- (b) Compute the V_{dc} , V_{rms} , efficiency and peak factor of bridge rectifier. CO1-U (16)
12. (a) Describe the operation and input & output characteristics of Emitter follower with neat diagrams CO1 - U (16)
- Or
- (b) Explain the operation and input & output characteristics of CC configuration. CO1-U (16)
13. (a) Compare JFET and BJT. Analyze the various characteristic parameters of JFET. CO1-U (16)
- Or
- (b) Explain the principle of operation of enhancement N-channel MOSFET and draw its drain characteristics. CO1- U (16)
14. (a) Analyze impedance, admittance and gain of transistors to design amplifier with suitable configuration. CO5-App (16)
- Or
- (b) Apply the current amplification factors of CB, CC and CE configuration to derive the relation between α , β and γ . CO5-App (16)
15. (a) Compare N-channel MOSFET and P-channel MOSFET with enhancement and depletion mode and analyze various characteristic parameters of MOSFET. CO1-U (16)
- Or
- (b) Explain the principle of operation of P-channel JFET with its drain characteristics and show how it differs from N – channel JFET. CO1-U (16)