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Question Paper Code : 52905

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second/ Third Semester

Electrical and Electronics Engineering

EC 6202 — ELECTRONIC DEVICES AND CIRCUITS

(Regulation 2013)

(Also Common to : PTEC 6202 – Electronic Devices and Circuits for B.E.
(Part – Time) – Second Semester – Electrical and Electronics Engineering –
(Regulation – 2014))

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the ripple factor of Half Wave rectifier?
2. Define the term transition capacitance of Diode.
3. In a CB connection $\alpha = 0.9$, $I_E = 1\text{mA}$ Compute I_B .
4. List the advantages of JFET over BJT.
5. State the significance of frequency Response characteristics.
6. Write the expression for amplification factor of JFET.
7. What are the various coupling schemes used in Cascade Amplifier?
8. Why is neutralization method employed in amplifier?
9. In a negative feedback, $A=100$, $\beta=0.04$ and $V_s=50\text{mV}$, Compute gain with feedback and feedback factor.
10. State the conditions for oscillation.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the voltage – current characteristics of PN junction diodes. Write down the expression for diffusion capacitance and diode current.

Or

- (b) Discuss the construction, working and application of following diodes.

(i) LASER Diode

(ii) Zener diode

(7 + 6)

12. (a) (i) Explain the field effect transistor action and different regions in which a FET operates. (7)

(ii) Explain the construction and Emitter Characteristics of UJT. (6)

Or

(b) With neat diagram, explain the structure and characteristics of Thyristor and IGBT.

13. (a) Draw and explain BJT Small signal model. Compare the performance of CE, CB and CC amplifier.

Or

(b) Explain the working of MOSFET amplifier and discuss the gain and frequency response characteristics.

14. (a) With neat circuit, explain Common mode and Differential mode analysis of Differential amplifier.

Or

(b) What is power amplifier? Discuss types of power amplifier and mention its applications.

15. (a) What are the advantages of negative feedback? Explain voltage series and shunt feedback techniques.

Or

(b) Draw and explain RC Phase shift Oscillator Circuit. Derive the frequency of oscillations.

PART C — (1 × 15 = 15 marks)

16. (a) Explain working of Transistor and junctions biasing conditions for each mode of transistor operation. Determine the value of emitter current, Collector current of a transistor having $\alpha_{dc} = 0.98$, Collector to base leakage current $I_{CBO} = 4\mu A$, $I_B = 5\mu A$.

Or

(b) Explain transistor current components for forward biased emitter Junction. Using hybrid Model, analyse and derive transistor parameters.