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Question Paper Code : 30940

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

Third Semester

Electronics and Communication Engineering

EC 2205 – ELECTRONIC CIRCUITS – I

(Common to Medical Electronics Engineering)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Stability Factor.

2. What are the advantages of voltage divider bias over other types of biasing?

3. Compare CE, CB, and CC configurations in terms of Voltage gain, Current gain, Input impedance and Output impedances.

4. State the significance of Bootstrapping.

5. In a Multi-stage amplifier, the gain of the first stage amplifier is 10 and the gain of the second stage is 50, Calculate the overall gain of the Multi-stage amplifier.

6. Draw the Hybrid-π equivalent circuit for BJT.

7. In a Class–A amplifier, $V_{CE(max)}$ 15V, $V_{CE(min)}$ = IV. Find the overall efficiency for Series-fed load and transformer coupled load.

8. Give the efficiency of Class–D power amplifier and mention its applications.

9. List the PIV of Half wave, Full wave and Bridge Rectifiers.

10. What is the difference between SMPS and LMPS?

PART B — (5 × 16 = 80 marks)

11. (a) What are the different biasing techniques? Explain each one in detail. (16)

Or

(b) (i) List different bias compensation techniques and explain. (12)

(ii) Discuss about the need for biasing. (4)

12. (a) Draw the Basic transistor hybrid model and derive the expressions for the amplifier parameters (i.e A_v, A_i, R_i and R_0) for a CE amplifier by using exact analysis. (16)

Or

(b) Explain in detail about high input impedance circuits Darlington pair and Bootstrapped circuits. (16)

13. (a) (i) Explain the general shape of frequency response of amplifier. (8)

(ii) Draw the high frequency equivalent circuit of FET and explain. (8)

Or

(b) (i) How to calculate overall upper and lower cutoff frequencies of multistage amplifiers? (10)

(ii) Define amplifier rise time and sag. Explain their relation to cutoff frequencies. (6)

14. (a) Define harmonic distortion and explain in detail how harmonic distortion is eliminated in push-pull configuration. (16)

Or

(b) (i) Explain about MOSFET power amplifier. (8)

(ii) Write in detail about heat sinks and thermal stability. (8)

15. (a) Derive the expressions for the rectification efficiency, ripple factor, transformer utilization factor, form factor and peak factor of (i) half wave rectifier (ii) full wave rectifier. (16)

Or

(b) (i) Describe how output voltage can be regulated with respect to line variations and load variations using SMPS. (8)

(ii) Explain how zener diode acts as a voltage regulator. (8)