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Question Paper Code : 11352

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Third Semester

Electronics and Communication Engineering

EC 1203 — ELECTRONIC CIRCUITS – I

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define Q-point.

2. What are advantages of self bias over other types of biasing?

3. Consider CE amplifier with fixed bias. If $\beta = 70$, $R_B = 380\ k\Omega$, $R_C = 1.4\ k\Omega$, . $V_{CC} = 30\ V$. Find the coordinates of Q-point.

4. How the constant current circuit is used to improve the CMRR?

5. Give the relationship between rise time and bandwidth.

6. What is the difference in bandwidth between single stage and multistage amplifiers?

7. What is the maximum conversion efficiency of class A power amplifier.

8. Draw the circuit of Class-S amplifier.

9. Define desensitivity of gain.

10. What is Nyquist criterian for stability of feedback amplifiers?

PART B — (5 × 16 = 80 marks)

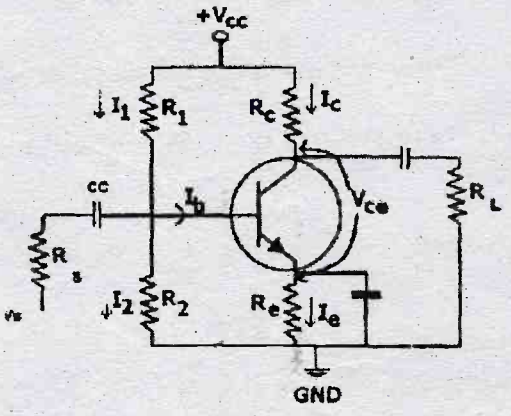
11. (a) Draw a voltage divider bias BJT network and derive all the stability factors S, S' and S". (16)

Or

(b) (i) Explain the methods of stabilizing the Q point. (8)

(ii) Explain the thermister and sensistor compensation. (8)

12. (a) Consider a single stage CE amplifier with $R_s = 1\,k\Omega$, $R_1 = 50\,k\Omega$, $R_2 = R_E = R_C = 2\,k\Omega$, $R_L = 2\,k\Omega$, $h_{fe} = 50$, $h_{ie} = 1.1\,k\Omega$, $h_{oe} = 25$, $\mu A/V$ and $h_{re} = 2.5 \times 10^{-4}$. Find A_i, R_i, A_v, A_{vs}, A_{is} and R_o. Use approximate analysis if permissible. (16)



Or

(b) Explain the function of differential amplifier with neat circuit. Derive its A_d, A_c and CMRR. (16)

13. (a) Draw the high frequency hybrid π model for a transistor in the CE configuration and explain the significance of each component. (16)

Or

(b) Discuss the high frequency equivalent circuit of FET and hence derive gain bandwidth product for any one configuration. (16)

14. (a) Explain and obtain the efficiency of transformer coupled class A power amplifier. (16)

Or

(b) (i) Write short notes on : (8)

Harmonic distortion

Frequency distortion.

(ii) Derive the efficiency of Class D amplifier. (8)

15. (a) (i) Determine the voltage gain, input and output impedance with feedback for voltage series feedback having $A = -100, Ri = 15\,k\Omega$, $Ro = 25\,k\Omega$ and $\beta = -0.1$. (8)

(ii) Discuss in detail the characteristics of negative feedback amplifier. (8)

Or

(b) (i) How does negative feedback reduce distortion in an amplifier? (8)

(ii) Compare the four types of negative feedback amplifier. (8)
