Enrolment No.

Full Marks :50   Time:2 Hrs

Answer any five (05) questions

1. What are the reasons for variation of Operating point (Q-point) of a transistor-explain briefly. Explain how this variation is controlled in one of the Self-bias circuits.   [10]

2. (i) Derive the simplified expression of voltage gain for a small signal CE amplifier using h-parameter or r-parameter model.
(ii) What is the problem of cascading CE and CB amplifier? How this problem may be overcome?
(6)+4 = 10]

3. Classify power Amplifier in terms of conduction angle. For Push-Pull Class B Amplifier determine the overall efficiency of the Amplifier.
(ii) For a class B amplifier (Push-Pull type) providing a 25 V peak signal to a 20 Ω load (speaker) and a power supply of VCC = 30 V, determine the input power, Output power and Circuit Efficiency. [5+5=10]

4. A Class A transformer coupled Amplifier is designed to deliver a maximum 5.5W power to a 4Ω load. Operating point is adjusted for symmetrical clipping with collector supply voltage of 20V. Assume ideal characteristic with V_{min} = 0V . Calculate,
(i) Transformer turns ratio, (ii) Peak collector current, (iii) Operating current (I_{CEQ}) and voltage (V_{CEQ}),
(iv) Collector circuit efficiency and (v) Power dissipation rating of the transistor.   [10]

5. How non-linear and Cross-over distortion is removed in class B power Amplifier?   [10]

6. (i) Why there is lower cut-off frequency in RC-coupled Amplifier?
(ii) For voltage series negative feedback circuit configuration determine the input impedance and output impedance. Let, without feedback input impedance, output impedance and voltage gain are Z_{in}, Z_{out} and A respectively. Gain of the feedback circuit is B.   [2 +8 =10]