

PART B — (5 × 16 = 80 marks)

11. (a) (i) Derive the stability factor for voltage divider bias. (8)
- (ii) For the circuit in Figure-1, draw the AC load line and determine the maximum output swing without distortion. (8)

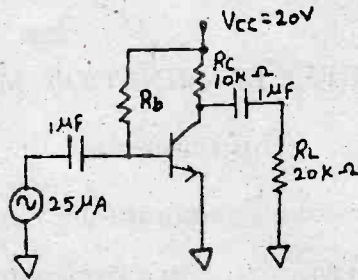


Figure -1

Or

- (b) (i) Discuss the various stabilization techniques of Q - point in a transistor. (8)
- (ii) Discuss in detail about the various bias compensation techniques. (8)
12. (a) (i) Compute the parameters of the circuit shown in Figure -2 with $\beta = 100$. (10)

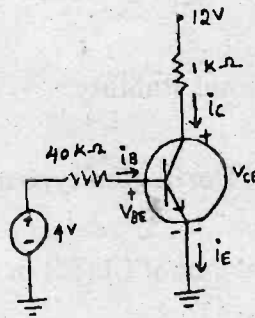


Figure -2

- (ii) Explain in detail about the Miller's theorem. (6)

Or

- (b) Compare CE, CB and CC transistor configurations.
- (i) In terms of input impedance, output impedance, current gain and voltage gain. (10)
- (ii) Draw the output characteristics of CE configuration and mark its regions of operation. (6)

13. (a) Determine the bandwidth of the amplifier shown in Figure -3. (16)

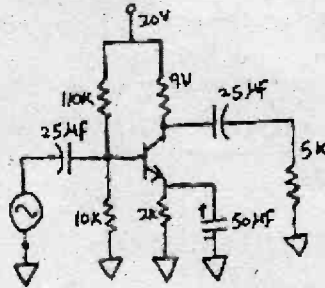


Figure -3

Or

- (b) (i) Explain in detail about the calculation of overall upper and lower cutoff frequencies of multistage amplifiers. (8)
- (ii) Draw the high frequency equivalent circuit of FETs and analyze in detail. (8)
14. (a) A class-B push-pull amplifier supplies power to a resistive load of 12Ω . The output transformer has a turns of 3:1 and efficiency of 78.5% (16)
- (i) Maximum power output
- (ii) Maximum power dissipation in each transistor
- (iii) Maximum base and collector current for each transistor
Assume $h_{fe} = 25$ and $V_{cc} = 20 \text{ V}$.

Or

- (b) Explain in detail about the transformer – coupled class –A audio power amplifier and analyze its efficiency. (16)
15. (a) How is regulation of output voltage obtained against line and load variation in SMPS? (16)

Or

- (b) (i) Explain the working of FWR with π filter. Derive its ripple factor. (8)
- (ii) Describe in detail about the voltage multipliers. (8)