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Question Paper Code: 21355

B.E./B.Tech. DEGREE EXAMINATION, MAYJUNE 2013.

Third Semester

Electronics and Communication Engineering

EC 5502/080530011/EC 39 — ETECLEONIC CIECULES — I

(Common to Medical Electronics Engineering)

(Regulation 2008)

Maximum: 100 marks

Time: Three hours

Answer ALL questions.

PART A $-(10 \times 2 = 20 \text{ marks})$

- I. Define the term biasing.
- Write the conditions of thermal stability.
- 3. Draw the circuit diagram of Darlington type amplifier.
- 4. Give reason for the improvement of CMRR in the amplifiers.
- 5. What is meant by Miller effect?
- 6. How do you calculate the bandwidth of a signal?
- 7. Mention the significance of heat sink in power devices.
- 8. Define class-D amplifier.
- 9. Define ripple factor.
- 10. Draw the block diagram of a power supply.

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

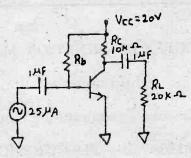


Figure -1

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 $\beta = 100$.

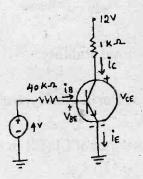


Figure -2

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

(6)

(8)

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)

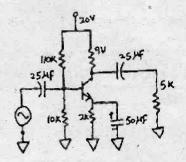


Figure -3

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 12 Ω . 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 $V_{cc} = 20$ 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)