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**Question Paper Code : 86566**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Third Semester

Electronics and Communication Engineering

EC 1203 — ELECTRONIC CIRCUITS – I

(Regulations 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Q-point.
2. What are advantages of self bias over other types of biasing?
3. Compare the performance of CE, CB, CC amplifiers with respect to voltage and current gain.
4. State Miller's theorem.
5. Mention the relationship between bandwidth and rise time.
6. Write the difference between single stage and multistage amplifiers.
7. Why non-linear distortion is called harmonic distortion?
8. What is thermal resistance? And give its unit.
9. Distinguish between voltage and current feedback connection.
10. What is the effect of negative feedback on gain and bandwidth?

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) Draw the AC equivalent circuit of a CE amplifier with voltage divider bias using hybrid parameters model and derive the equations for input impedance, output impedance, voltage gain and current gain. (16)

Or

- (b) Explain an emitter coupled differential amplifier and its salient features with neat circuit diagram. And also derive the expressions for CMRR, input impedance and output impedance. (16)
13. (a) Discuss the high frequency equivalent circuit of FET and hence derive gain bandwidth product for any one configuration. (16)

Or

- (b) List precautions that should be observed for operational amplifier circuit stability. Briefly explain in each case. (16)
14. (a) (i) With neat circuit diagram explain transformer coupled class A Audio power amplifier. (8)
- (ii) Determine the efficiency of class A amplifier. (8)

Or

- (b) (i) With neat circuit diagram explain class B push pull amplifier. (8)
  - (ii) What are the different types of distortion in amplifiers? Explain. (8)
15. (a) Discuss in detail the effect of negative feedback on the following
- (i) Bandwidth
  - (ii) Distortion
  - (iii) Stability
  - (iv) Input and output impedances. (4 × 4 = 16)

Or

- (b) (i) With a neat sketch explain what type of feedback is employed in Emitter follower? How much negative feedback is used? (8)
- (ii) With the aid of input and output circuit of an Emitter follower, obtain the expression for its resultant voltage gain. (8)