7240

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DCE - THIRD SEMESTER EXAMINATION

ELECTRONIC CIRCUITS—I

Time : 3 Hours]

[*Total Marks* : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Explain the importance of transistor biasing.

2. List any three advantages of self bias.

3. Draw the small signal model of a FET.

4. Define the terms gain and bandwidth of an amplifier.

5. Mention the merits of negative feedback in amplifiers.

6. State the need for power amplifier.

7. Mention any three applications of class-C amplifiers.

8. Classify power amplifiers based on period of conduction.

9. State the condition for an amplifier to work as an oscillator.

10. Draw the equivalent circuit of piezoelectric crystal.

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Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain with circuit diagram the fixed biasing of a transistor. List the drawbacks of fixed bias circuit.

(OR)

(b) Explain with circuit diagram the self-biasing of a transistor.

12. *(a)* Explain, with circuit diagram, the working of two-stage RC coupled amplifier.

(OR)

(b) Explain with circuit diagram the working of two-stage transformer coupled amplifier.

13. *(a)* Explain the effect of negative feedback on gain, band width, input and output impedances of an amplifier.

(OR)

(b) Draw the block diagrams of voltage series, current series, current shunt and voltage shunt feedback amplifiers.

14. *(a)* Explain, with circuit diagram, the working of class-B Push-Pull amplifier.

(OR)

(b) Explain, with circuit diagram, the working of class-AB Push-Pull Amplifier.

15. *(a)* Explain, with a circuit diagram, the working of Hartley oscillator.

(OR)

(b) Explain, with a circuit diagram, the working of transistor crystal oscillator.

PART—C

Instructions: (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Analyze the concept of DC and AC load lines of a transistor.

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