7240

C20-EC–302

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BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 2022

DECE - 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. Define thermal runaway.

2. List any three draw backs of fixed bias circuit.

3. State the need for cascading in amplifier.

4. Draw the circuit diagram of Darlington pair.

5. List any three types of negative feedback amplifiers.

6. Draw the circuit diagram of double tuned amplifier. Also draw its frequency response.

7. Mention any three applications of class C amplifiers.

8. State the need for power amplifier.

9. Draw the equivalent circuit of piezoelectric crystal.

10. State the conditions for an amplifier to work as an oscillator.

PART—B

8×5=40

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 the need for stability in a transistor amplifier.

(OR)

(b) Explain collector to base bias circuit of a transistor.

12. *(a)* Classify the amplifiers based on frequency of operation, period of conduction and type of coupling.

(OR)

(b) Explain with the help of circuit diagram the working of Darlington amplifier.

13. *(a)* Derive the expression for the gain of negative feedback amplifier.

(OR)

(b) Explain the effect of negative feedback on gain, bandwidth, input and output impedances of an amplifier.

14. *(a)* Explain the working of class-B power amplifier.

(OR)

(b) Explain the working of class-A power amplifier.

15. *(a)* Explain with a circuit diagram the working of tuned collector oscillator.

(OR)

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

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

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

16. Why is operating point in self-bias circuit more stable than other biasing circuits?

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