N24-8880

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER – 2024

ELECTRONIC DEVICES AND CIRCUITS

[Maximum Marks : 100]   [Time : 3 hours]

PART – A
(Maximum Marks : 10)

I.   Answer **all** questions in one or two sentences. Each question carries 2 marks.

  1. Define stability factor.

  2. Derive the expression for resonant frequency of a parallel resonant circuit.

  3. What is the need of heat sink in power amplifiers?

  4. Define bandwidth of an amplifier.

  5. State the Barkhausen criterion for oscillation.   (5x2=10)

PART – B
(Maximum Marks : 30)

II.   Answer any **five** of the following questions. Each question carries 6 marks.

  1. Explain the working of a transistor as an amplifier.

  2. Draw the voltage divider bias circuit and write the function of each component.

  3. Explain cross over distortion.

  4. Derive the expression for the gain of a feedback amplifier with negative feedback.

  5. Compare FET AND BJT.

  6. What is a UJT? Draw the symbol and equivalent circuit of a UJT and explain.

  7. Describe the RC differentiating circuit and state the conditions for proper differentiation.

                                                                      (5x6=30)

PART – C
(Maximum Marks : 60)

(Answer **one full** question from each unit. Each full question carries 15 marks)

UNIT – I

III. Find the voltage gain, current gain, power gain, input resistance and output resistance of CE amplifier. (15)

OR

IV. Explain the working principle and frequency response of a 2 stage RC coupled CE amplifier. (15)

UNIT – II

V. (a) Explain the classification of power amplifiers. (6)

(b) Write the importance of impedence matching in power amplifiers. (6)

(c) Write any three differences between voltage amplifier and power amplifier. (3)

OR

VI. Explain the operation and frequency response of single tuned amplifier. (15)

UNIT –III

VII. (a) Explain the different types of negative feedback connection in amplifiers and write the expression for input impedence and output impedence in each case. (12)

(b) Write any three advantages of negative feedback. (3)

OR

VIII. (a) Explain the working of a UJT relaxation oscillator. Draw the waveforms at emitter, base 1 and base 2. (9)

(b) Explain the construction of JFET. (6)

UNIT – IV

IX. (a) Explain the working of RC phase shift oscillator. (8)

(b) Explain the working of Hartley oscillators. (7)

OR

X. Explain the operation of Astable multivibrator with the help of circuit diagram and waveforms. (15)

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