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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2025

ANALOG CIRCUITS

[Maximum marks: 100]   [Time: 3 Hours]

PART – A
Maximum marks: 10

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

1. What is meant by Q point?

2. What is the gain of a negative feedback amplifier?

3. List the applications of voltage follower.

4. State the conditions for proper integration.

5. List any two advantages of an RC oscillator.   (5 x 2 = 10)

PART – B
Maximum marks: 30

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

1. What is coupling? Explain the need for coupling.

2. Why the gain of an RC coupled amplifier falls at low as well as at high frequencies?

3. Explain the working of a mono-stable multivibrator.

4. Describe Precision half wave rectifier using Op-Amp.

5. Explain the working of an RC differentiator with circuit diagram.

6. Explain the working of a shunt positive diode clipper.

7. Explain the working of adder using Op-Amp.   (5 x 6= 30)

PART – C
Maximum marks: 60
(Answer *one full* question from each unit*. Each full question carries **15** marks)

UNIT – I

III. (a) Explain with neat figure the working of a common collector amplifier.   (8)

(b) What is mid frequency band? List the advantages of an RC coupled amplifier.   (7)

OR

IV. (a) Explain the advantages, disadvantages and applications of transformer coupling. (8)

(b) List the effects of different feedback on amplifier characteristics. (7)

UNIT – II

V. (a) Sketch the circuit of a colpitt's oscillator and explain its operation. (8)

(b) Summarize an LC oscillator and list its applications. (7)

OR

VI. (a) Explain with a neat circuit and waveforms, the operation of bistable multivibrators using transistor. (9)

(b) State the Barkhausen criterion for sustained oscillation. (6)

UNIT - III

VII. (a) Explain triangular and sawtooth waveforms and their applications. (8)

(b) Explain the operation of a low pass filter with circuit diagram & waveforms. (7)

OR

VIII. (a) Explain the operation of a negative diode clamper. (8)

(b) Explain a series positive biased clipper with circuit diagram and waveforms. (7)

UNIT – IV

IX. (a) Explain with a neat sketch, the working of an Op-Amp circuit whose input is 10mV and output is (-) 1V. (8)

(b) Explain an Op-Amp differentiator with circuit diagram and typical waveforms. (7)

OR

X. (a) Draw and explain the working of a difference amplifier using Op-Amp. (8)

(b) List the requirements of an ideal amplifier. (7)