

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER-2021**

ELECTRONIC DEVICES AND CIRCUITS

[Maximum marks: 75]

(Time: 2.15 Hours)

PART – A

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

1. Define operating point.
2. List any two applications of Class B push pull amplifier.
3. Write the relation between Q, bandwidth and resonance frequency in a tuned amplifier.
4. State Barkhausen criterion for oscillation.
5. List the different types of MOSFETs. (3 x 2 = 6)

PART – B

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

1. Compare the performance of RC coupled, transformer coupled and direct coupled multistage amplifiers.
2. Explain the need for stabilization of operating point.
3. What is resonant frequency? Derive the expression for resonant frequency of series resonant circuit.
4. Explain the operation of Class B push-pull amplifier with circuit diagram.
5. Explain the effects of negative feedback in amplifiers.
6. Prove that the output of RC integrator circuit is proportional to the integral of input and state the conditions for proper integration.
7. Explain the working of Colpitts oscillator. (4 x 6= 24)

PART – C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT –I

- III. (a) Derive the expression for voltage gain, current gain, input and output impedance of CE configuration. (10)

(b) List the features and applications of emitter follower. (5)

OR

IV(a) Derive the expression for AC and DC load line with necessary diagrams. (10)

(b) Explain the working of direct coupled multistage amplifier with a neat diagram. (5)

UNIT-II

V (a) Explain the operation and frequency response of single stage tuned amplifier. (10)

(b) Distinguish between voltage amplifier and power amplifier. (5)

OR

VI. (a) Explain the classification of power amplifiers. (10)

(b) Write a short note on heat sink in power amplifiers. (5)

UNIT-III

VII.(a) Illustrate the types negative feedback in amplifiers and the expressions for input and output impedance. (10)

(b) Derive the expression for gain of feedback amplifiers. (5)

OR

VIII.(a) With neat circuit diagram and necessary waveforms explain the working of UJT relaxation oscillator. (10)

(b) Compare BJT and FET. (5)

UNIT-IV

IX. (a) With necessary diagrams and waveforms explain the working of astable multivibrator. (10)

(b) List the applications of multivibrators. (5)

OR

X. (a) Explain the working of Schmitt trigger with necessary diagrams. (8)

(b) Explain the working of RC phase shift oscillator with circuit diagram. (7)
