

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

METALLURGY AND MACHINE TOOLS

[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. What do you mean by heat treatment?
2. What is point defect in a crystal lattice?
3. List any two taper turning methods in lathe.
4. List any two work holding devices in drilling.
5. What is a shaper?

(5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

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

1. List the purpose of annealing.
2. Describe the metal powder manufacturing methods in powder metallurgy.
3. List any six functions of cutting fluid.
4. List the lathe types.
5. Draw a sensitive drilling machine and mark parts.
6. With sketch describe up milling and down milling.
7. Explain the working principle of a slotting machine.

(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. Draw Iron-carbon equilibrium diagram and mark all the details. (8)
b. Explain austempering process of heat treatment. (7)

OR

- IV. a. Draw and explain cooling curve for pure iron. (8)
b. List the advantages of powder metallurgy. (7)

UNIT – II

- V. a. Draw the line sketch of an engine lathe and mark all parts. (8)
b. Compare orthogonal and oblique cutting. (7)

OR

- VI. a. With sketch explain taper turning by form tool method. (8)
b. Explain chip types in metal cutting with sketches. (7)

UNIT- III

- VII. a. List and explain tool holding devices used in drilling. (8)
b. Draw line sketch of a horizontal milling machine and mark parts. (7)

OR

- VIII. a. With sketch explain the nomenclature of a twist drill. (8)
b. List various milling operations and explain gang milling. (7)

UNIT - IV

- IX. a. With sketch explain the construction details of a shaper. (8)
b. List the specifications of a slotter. (7)

OR

- X. a. Draw a double housing planer machine and mark all parts. (8)
b. List and explain work holding devices used in slotting machine. (7)
