TED (15/19) – 4023
(Revision – 2015/19)

**A23 - 01409**

Reg.No……..
Signature……...

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE , APRIL – 2023**

**METALLURGY & MACHINE TOOLS**

(Maximum Marks : 100) (Time : 3 hours)

**PART – A**
(Maximum Marks : 10)

Marks

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

1. Define Strain hardening.
2. State the use of Mandrel.
3. Define indexing.
4. What is the use of ratchet & pawl mechanism?
5. List the objectives of normalizing.

(5x2=10)

**PART – B**
(Maximum Marks : 30)

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

1. Draw the cooling curve of pure iron.
2. Differentiate between slip and twinning.
3. State the functions of cutting fluid.
4. Explain taper turning by tail stock set over method with neat sketch.
5. List tool holding devices in drilling machine and explain any two.
6. Compare shaper machine and planer machine.
7. Write the specification of slotter machine.

(5x6=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-iron carbide equilibrium phase diagram. (8)

(b) Explain different steps in powder metallurgy process. (7)

**OR**

**IV.** (a) Explain the process Austempering and Martempering with the help of TTT curve. (8)

(b) Discuss different types of crystal defects. (7)

### UNIT – II

**V.** (a) Draw the sketch of a centre lathe and label the important parts. (8)

(b) Explain different types of chips with neat sketch. (7)

**OR**

**VI.** (a) Explain Apron mechanism with neat sketch. (8)

(b) List six work holding devices in lathe and explain any two. (7)

### UNIT –III

**VII.** (a) Draw the sketch of a radial drilling machine and label the parts. (8)

(b) Explain the cutting parameters of a drilling machine. (7)

**OR**

**VIII.** (a) Draw the neat sketch of a horizontal milling machine and label the parts. (8)

(b) Explain the tool holding devices used in milling machine. (7)

### UNIT – IV

**IX.** (a) Explain the working of a Crank and Slotted link mechanism with the help of a schematic diagram. (8)

(b) List different operations to be performed in a slotting machine and explain any four. (7)

**OR**

**X.** (a) Explain the working of a planer with neat sketch. (8)

(b) List work holding devices used in shaping machine and explain any four. (7)

**********