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

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Reg.No……..
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL – 2024

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. What do you mean by eutectoid steel?
2. Define cutting speed and feed.
3. Give two differences between up milling and down milling.
4. How can you specify a drilling machine?
5. Name the operations performed in a slotter. (5x2=10)

PART – B
(Maximum Marks : 30)

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

1. Explain BCC and FCC structure.
2. Write down the differences between orthogonal and oblique cutting.
3. Name some work holding devices in a lathe.
4. Name the different types of milling cutters.
5. With a neat sketch give the nomenclature of a taper shank twist drill.
6. Mention some of the operations performed in a shaper.
7. Make a comparison between a shaper and a planar.

(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 the Iron-Carbon equilibrium diagram showing various phases and critical lines. (8)

(b) What is tempering? Differentiate Austempering and Martempering. (7)

OR

IV. (a) List down the different types of crystal defects. Explain Interstitial defect and substitutional defect. (8)

(b) Briefly explain (i) Nitriding (ii) Cyaniding. (7)

UNIT – II

V. (a) Describe the characteristics of a cutting tool material. (8)

(b) Discuss the desirable properties of cutting fluids. (7)

OR

VI. (a) Explain any two methods of taper turning in a lathe with neat sketches. (8)

(b) Draw the single point cutting tool nomenclature. (7)

UNIT –III

VII. (a) Classify the drilling machines. (8)

(b) Name different work holding devices in a drilling machine and sketch any two of them. (7)

OR

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

(b) With a neat sketch explain the nomenclature of a plain milling cutter. (7)

UNIT – IV

IX. (a) Draw and explain the crank and slotted lever mechanism in a shaper. (8)

(b) List down the work holding devices of a planar. Sketch any two work holding devices. (7)

OR

X. (a) Explain the automatic feed mechanism in a shaper. (8)

(b) Draw a neat sketch of slotting machine and mark all parts. (7)

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