



TED (15) – 4023

Reg. No.

(REVISION – 2015)

Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

METALLURGY AND MACHINE TOOLS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. List crystal defects.
2. Draw the geometry of orthogonal cutting.
3. Differentiate between up-milling and down-milling.
4. Define the 'feed' in shaping machine.
5. Indicate main mode of specifying a PLANER.

(5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain eutectic and eutectoid reactions with respect to cooling of alloys.
2. Describe 'minimum quantity lubrication' (mql).
3. Explain the specification of twist drill.
4. Mention different types of operation performed in a shaping machine.
5. Identify the property changes by deformation.
6. State the gear train ratio for cutting specified screw threads.
7. Give the nomenclature of plain milling cutter.

(5 × 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 and describe the iron carbon equilibrium diagram. 8
 (b) Describe residual stress due to heat treatment. 7

OR

- IV (a) Describe various methods for manufacturing metal powder. 8
 (b) Write notes on :
 (i) Annealing (ii) Tempering. 7

UNIT — II

- V (a) Explain 'chip formation' with diagram in metal cutting. 8
 (b) Illustrate the term 'machinability' of a material. 7

OR

- VI (a) List main parts of centre lathe. Explain any three major parts. 8
 (b) List and explain different methods of taper turning. 7

UNIT — III

- VII (a) Explain tool holding devices for drilling. 8
 (b) Classify the drilling machines. 7

OR

- VIII (a) Describe the working of different milling machines with line sketches. 8
 (b) Illustrate work holding devices for milling. 7

UNIT — IV

- IX (a) Compare shaper and planer. 8
 (b) Illustrate the quick return arrangements for a slotting machine by a line diagram. 7

OR

- X (a) Explain automatic feed mechanism in shaper. 8
 (b) Describe any one method of table drive of a planing machine. 7