TED (10)–3039 Reg. No. .....

(REVISION—2010) Signature .....

THIRD SEMESTER DIPLOMA EXAMINATION IN MECHANICAL ENGINEERING—OCTOBER, 2013

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. Define space lattice.
2. State the meaning of alloy steel.
3. What is eutectoid steels ?
4. What is oblique cutting ?
5. Write the use of a slotting machine. (5×2=10)

PART—B

(Maximum marks : 30)

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

1. Explain the crystal structures BCC and FCC.
2. Write the difference between brass and bronze.
3. Briefly describe the hardening process.
4. Define cutting speed, feed and depth of cut.
5. List the different work holding devices using in lathe.
6. Write the function of important parts of a shaper.
7. Briefly describe about plain milling and gang milling. (5×6=30)

PART—C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each question carries 15 marks.)

UNIT—I

III (a) Draw a neat sketch of a cupola furnace and mark important parts. 7

(b) Explain the different crystal defects. 8

OR

Marks

IV (a) Explain work hardening or strain hardening. 7

(b) Explain the production of steel by Bessemer process with neat figure. 8

UNIT—II

V (a) Draw a neat sketch of iron carbon equilibrium diagram and mark important points. 7

(b) Explain the following heat treatment processes :

(i) Annealing (ii) Normalizing. 8

OR

VI (a) Draw and explain T.T.T. diagram for steel. 7

(b) Explain different surface hardening methods. 8

UNIT—III

VII (a) What is tool signature ? Write tool signature for single point tool. 7

(b) Explain the taper turning by compound rest. 8

OR

VIII (a) Draw a neat sketch of a twist drill and show various parts. 7

(b) What are the properties of lubricants ? 8

UNIT—IV

IX (a) Explain the different work holding devices using in milling machine. 7

(b) Explain the working principle of a shaper. 8

OR

X (a) Write the classification of shaper. 7

(b) Explain the different tool holding devices using in milling machine. 8