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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2020

METALLURGY AND MACHINE TOOLS

[Maximum Marks: 75] [Time: 2.15 Hours]

PART-A

(Answer ***any three*** questions in one or two sentences. Each question carries 2 marks)

I. 1. How CCT curve differ from TTT curve?

2. Define the term MQL.

3. List various work holding devices in lathe.

4. State the use of clapper box in a shaper.

5. List four milling cutters. (3 x 2 = 6)

PART-B

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

II 1. List the advantages of powder metallurgy.

2. Explain point defects with sketch.

3. Explain tool life and state Taylor's equation.

4. List six required properties of cutting fluid.

5. Explain the nomenclature of a plain milling cutter.

6. Differentiate between up milling and down milling with sketch.

7. How do you specify a planer for procurement? (4 x 6 = 24)

PART-C

(Answer ***any of the three units*** from the following. Each full question carries 15 marks)

UNIT – I

III (a) Draw the iron carbon equilibrium diagram showing various phases and critical line. (8)

(b) Differentiate between annealing and normalising. (7)

OR

IV (a) Draw and explain TTT diagram. (8)

(b) State the need of heat treatment processes. (7)

UNIT – II

V (a) Draw a line sketch of centre lathe and mark all parts. (8)

(b) Draw three views of single point cutting tool showing various angles and elements. (7)

OR

VI (a) List different taper turning methods. Explain taper turning by compound rest method. (8)

(b) Differentiate between orthogonal and oblique cutting. (7)

UNIT- III

VII (a) Explain different tool holding devices in drilling machine with sketch. (8)

(b) Draw a line diagram of vertical milling machine and mark all the parts. (7)

OR

VIII (a) Describe the sequence of operations carried out by milling machine during spur gear cutting. (8)

(b) With a line sketch show the nomenclature of a twist drill. (7)

UNIT - IV

IX (a) With a line diagram explain the hydraulic mechanism for quick return in a shaper. (8)

(b) Compare slotter and planer. (7)

OR

X (a) With a sketch explain the open and cross belt drive mechanism of a planer. (8)

(b) Draw line diagram of slotter and label the parts. (7)
