17306

21819

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**

(i) State any four properties of copper.

(ii) Define ceramic? Write its properties.

(iii) Give the composition of white cast iron. State any two applications of it.

(iv) State any two applications of bronze and aluminum.

(v) Name the basic types of rubber.

(vi) Differentiate between C.I and steel.

(vii) Define thermoplastic. Give two examples.

(viii) Write importance to study phase diagram.

b) **Attempt any TWO of the following:** **8**

(i) Classify engineering materials. Write examples of each.

(ii) Describe different alloys of aluminum. Explain any two composition and applications.

(iii) Explain alloy steel. State effects of any four alloying elements on the properties of steel.

Marks

2. Attempt any FOUR of the following: **16**

a) Draw Iron-Iron carbide phase equilibrium diagram and label it with critical temperatures.

b) Differentiate between annealing and normalizing.

c) Explain heat treatment? Write any three purposes of it.

d) Explain induction hardening process.

e) State the advantages and disadvantages of foundry process.

f) List any four pattern materials. State any four factors for the selection of pattern material.

3. Attempt any FOUR of the following: **16**

a) Explain any two types of patterns with neat sketch.

b) Write the colour coding for patterns.

c) Draw any two moulding tools. Write their application.

d) List different types of moulding sands. Explain any one in brief.

e) Draw neat sketch of gating system and label it. Write any two purpose of gating system.

f) Describe core and core print and their uses in foundry?

4. Attempt any FOUR of the following: **16**

a) Explain centrifugal casting with neat sketch.

b) Write any two defects in casting with their causes and remedies.

c) State different types of chips. Explain any one with sketch.

d) Distinguish the following as single point cutting tool or multi-point cutting tool:

(i) Boring tool

(ii) Turning tool

(iii) Grinding wheel

(iv) Milling cutters

e) List any four cutting fluids. State any four properties of cutting fluids.

f) Why cemented carbide is considered as an useful tool material?

Marks

5. Attempt any FOUR of the following: **16**

a) Differentiate between orthogonal cutting and oblique cutting.

b) Draw a neat sketch of lathe machine and name its parts.

c) Describe the working principle of lathe machine. Write main parameter for lathe machine specification.

d) Enlist any four accessories of lathe. Explain any one with sketch.

e) State any four operations performed on lathe machine. Explain any one.

f) Draw a neat labelled sketch of bench drilling machine.

6. Attempt any FOUR of the following: **16**

a) List any four operations performed on drilling machine. Explain any one.

b) Write the classification of drilling machine.

c) Draw a neat sketch of column and knee type milling machine. Explain functions of any two parts.

d) State different types of milling cutters. Draw a sketch of any one with its application.

e) Explain with neat sketch, the working principle of milling machine.

f) Suggest appropriate milling cutters for following operations:

(i) T slot

(ii) Gear tooth

(iii) Key-way

(iv) Rounding of corner
