

12051

13141

3 Hours / 100 Marks

Seat No.

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Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

Marks

1. Attempt any TEN of the following :

20

(a) Define – Ductility.

(b) Why annealing is done on material ?

(c) List operations performed on drilling m/c.

(d) Write any four types of lathe machines.

(e) State any properties and use of Y-alloy of Aluminium.

(f) State any four properties of cutting tool material.

(g) List any four pattern materials.

(h) State any two factors on which selection of pattern depends.

(i) Define the term – Heat treatment.

(j) List moulding tools and equipments.

(k) State any four examples of polymeric material.

(l) Enlist any four accessories used on lathe.

P.T.O.

2. Attempt any FOUR of the following : 16

- (a) What is plain carbon steel ? State any two types of it.
- (b) State composition of bronze and write its importance in industry.
- (c) Write any four applications of plastic and rubber in industry.
- (d) Explain the properties of copper that makes it useful in engineering material.
- (e) List any four effects of following alloying elements on properties of steel :
 - (i) Nickel
 - (ii) Chromium
- (f) List four applications of (i) Tools steels, (ii) Duralumin.

3. Attempt any FOUR : 16

- (a) Write any four IS designation codes with their compositions.
- (b) Draw and label Fe-C phase transformation diagram.
- (c) What is meant by surface hardening process ? Why it is carried out ?
- (d) Write any two differences between thermoplastics and thermosetting plastics. Also state one example for each.
- (e) State requirements for hardening.
- (f) Enlist types of moulding sand and state their application.

4. Attempt any FOUR : 16

- (a) Differentiate between hardening and tempering.
- (b) What is colour coding ? State any two examples of pattern colour coding.
- (c) State advantages and disadvantages of die casting process.
- (d) What is function of additives in moulding sand ? Give examples of any two additives.
- (e) List different types of gates. Explain any one with neat sketch.
- (f) Draw neat sketch of typical mould and name its main parts.

5. Attempt any FOUR :**16**

- (a) What are the common allowances provided on pattern and why ?
- (b) What are the main characteristics of the moulding sand ?
- (c) Draw a neat sketch showing of mechanism of chip forming and label it.
- (d) Explain different types of chips formed during machining processes with sketch.
- (e) List the properties and examples of cutting fluid.
- (f) What are the effects of sand quality on moulding and casting ?

6. Attempt any FOUR :**16**

- (a) List the common defects in casting with their causes.
 - (b) Calculate the change gears for cutting threads having pitch 3 mm on lathe having lead screw of 9 mm pitch.
 - (c) Explain knurling process with sketch.
 - (d) What is the use of mandrel ? List types of mandrel.
 - (e) Classify drilling machines.
 - (f) List various types of drills and sketch any one.
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