

17306

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) 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) List any four types of cast Irons.
 - ii) Enlist effects of Nickel as alloying element on the properties of steel.
 - iii) State any four applications of Aluminium.
 - iv) State any four applications of Copper.
 - v) Enlist any four properties of polymeric materials.
 - vi) Give classification of rubber.
 - vii) State any two applications of ceramics materials in automotive industry.
 - viii) Enlist types of surface hardening processes.

P.T.O.

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

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- i) Describe plain carbon steel with its composition and properties.
- ii) Enlist different alloys of copper. State its important characteristics. Discuss any two in brief.
- iii) State the properties of thermoplastic Polymers and give any two applications of it.

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

16

- a) Draw neat labelled sketch of Fe-Fe₃C equilibrium diagram showing all details.
- b) Enlist different types of heat treatment processes. Also list purpose of Normalising process.
- c) Describe full Annealing process with its purpose.
- d) Describe the need of heat treatment process on automotive components.
- e) Give classification of foundries. Enlist any two advantages and two disadvantages of foundry processes.
- f) State any two advantages and two disadvantages of wood as pattern material.

- 3. Attempt any FOUR of the following:** **16**
- a) State the different factors considered while selecting the pattern.
 - b) List the different types of allowances provided on pattern and describe draft allowance with neat sketch.
 - c) Describe with neat sketch types of cores.
 - d) State the different properties of moulding sand.
 - e) Describe with neat sketch use of Rammer and Bellow.
 - f) State any four defects in casting with their causes and remedies.
- 4. Attempt any FOUR of the following:** **16**
- a) Describe risering system in case of sand casting. List any two types of risers.
 - b) State advantages, disadvantages and applications of pressure die casting.
 - c) Describe the mechanism of chip formation. Enlist different types of chips formed during machining.
 - d) Describe with neat sketch orthogonal cutting and oblique cutting.
 - e) State any four purposes and properties of cutting fluids.
 - f) Draw neat labelled sketch of single point cutting tool with its nomenclature.

- 5. Attempt any FOUR of the following:** **16**
- a) State the different types of cutting fluids. State any four properties of cutting fluid.
 - b) Give classification of lathe.
 - c) Describe with neat sketch specification of lathe.
 - d) Describe with neat sketch threading and knurling operation performed on lathe.
 - e) List any four accessories used on lathe. Draw neat sketch of collar mandrel.
 - f) List any four types of drilling machines. Explain drilling operation principle in brief.
- 6. Attempt any FOUR of the following:** **16**
- a) Draw neat labelled block diagram of Bench drilling machine. Write function of any two part in brief.
 - b) Give classification of Milling machine.
 - c) Describe the straight teeth plain milling cutter.
 - d) Describe with neat sketch Gang milling operation.
 - e) List and describe the major parts of column and knee type milling machine.
 - f) Describe “Keyway” making milling operation.
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