

# 22307

**21222**

**3 Hours / 70 Marks**

Seat No. 

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15 minutes extra for each hour

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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 FIVE of the following: 10**
- a) List types of plain carbon steel.
  - b) Give objectives of heat treatment.
  - c) List four hand moulding tools used in foundry.
  - d) State four properties of cutting fluid.
  - e) Define depth of cut and tool life in machining process.
  - f) State major parts of column and knee type universal milling m/c.
  - g) Classify drilling machine.
- 2. Attempt any THREE of the following: 12**
- a) Differentiate between grey cast iron and white cast iron.
  - b) Differentiate between flame hardening and induction hardening.
  - c) State four properties of moulding sand. Explain porosity.
  - d) Draw block diagram of centre lathe and state major parts.

P.T.O.

- 3. Attempt any THREE of the following:** **12**
- a) Write composition, properties and use of Gun metal
  - b) Identify the properties of material used for connecting rod with justification.
  - c) Describe annealing process with its significance.
  - d) Draw a neat sketch of True Centrifugal casting and state its application.
- 4. Attempt any THREE of the following:** **12**
- a) Identify properties of the glass fiber (GRP) material when used for disc cover with justifications.
  - b) Illustrate the Iron-Iron carbide (Fe-Fe<sub>3</sub>C) diagram showing critical temperature on it.
  - c) Apply proper heat treatment process for manufacturing motor cycle parts with justification.
  - d) Explain pressure die casting principle and state its applications in automobile Industry.
  - e) List any four types of pattern. Explain segmental pattern for production of circular parts in foundry process.
- 5. Attempt any TWO of the following:** **12**
- a) Explain different types of chips observed while machining. Differentiate between orthogonal cutting and oblique cutting.
  - b) Explain meaning of single point cutting tool 0-7-6-8-15-16-0.8 according to ASA system.
  - c) Choose proper operation method used on lathe machine for following requirements with justification. (any three)
    - i) produce angle on job
    - ii) enlarging previously drilled hole
    - iii) producing a hole
    - iv) cutting the job
    - v) finishing previously drilled hole

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**Marks**

**6. Attempt any TWO of the following:**

**12**

- a) Write functions of any two parts of bench drilling machine with neat sketch.
  - b) Use suitable lathe operation for manufacturing  $15^\circ$  taper on a job with justification.
  - c) Describe with neat sketch specification of lathe machine.
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