

# 17306

**11920**

**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. a) Attempt any SIX of the following: 12
- (i) Define fatigue and plasticity.
- (ii) State the meaning of 18-4-1 H.S.S.? State its properties.
- (iii) State two engineering application of Brass and Aluminium.
- (iv) State the composition and properties of Babbit metal.
- (v) State the properties and application of ceramics.
- (vi) List the basic types of rubber? Give one application of each.
- (vii) List four polymeric materials.
- (viii) Define heat treatment process with two purposes.

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- b) **Attempt any TWO of the following:** **08**
- (i) State the effects of chromium and molybdenum on the properties of steel.
  - (ii) State two properties and applications of copper.
  - (iii) Compare between thermoplastic and thermosetting plastic.
2. **Attempt any FOUR of the following:** **16**
- a) Draw the Fe-C phase transformation diagram and show critical temperatures on it.
  - b) Explain induction hardening process.
  - c) Distinguish between annealing and normalizing process.
  - d) Describe flame hardening process with neat sketch.
  - e) State four advantages and disadvantages of foundry process.
  - f) List four types of patterns and explain three piece pattern with neat sketch.
3. **Attempt any FOUR of the following:** **16**
- a) Explain the standard accepted colour codes for pattern.
  - b) List four pattern making allowances and explain draft allowance with neat sketch.
  - c) State two moulding tools with neat sketches.
  - d) State four properties of moulding sand.
  - e) Explain two types of cores used in foundry process.
  - f) Draw a neat sketch of gating system and state function of pouring basin.

- 4. Attempt any FOUR of the following: 16**
- a) Explain two defects with causes and remedies of casting defects.
  - b) Explain hot chamber die casting process with sketch.
  - c) State three types of chips with neat sketch.
  - d) Compare between orthogonal and oblique cutting.
  - e) Draw the nomenclature of single point cutting tool with neat sketch.
  - f) List four cutting tool materials and explain any one.
- 5. Attempt any FOUR of the following: 16**
- a) Explain tool signature with example.
  - b) Write the classification of lathe machines.
  - c) State any four accessories used on lathe and explain any one with sketch.
  - d) State lathe machine specification with neat sketch.
  - e) List four operations performed on lathe machine and explain knurling operation with neat sketch.
  - f) Classify drilling machines.
- 6. Attempt any FOUR of the following: 16**
- a) Draw neat sketch of bench drilling machine and name its parts. Write function of any two parts.
  - b) State classification of milling machine.
  - c) Compare between up milling and down milling.
  - d) Explain face milling cutter with neat sketch.
  - e) List four operations performed on milling machine. Explain angular milling with neat sketch.
  - f) Draw a neat sketch of column and knee type milling machine. Explain function of knee and arbor.
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