

17306

15116

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) Use of Non-Programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any **SIX** of following :

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- State the classification of engineering materials.
- List any two types of synthetic rubber. Give one application of each.
- Write any two purposes of heat treatment.
- Explain flame hardening process in brief.
- List four hand moulding tools used in foundry.
- State two functions of gating system.
- Enlist types of cutting tools.
- List any two accessories and attachments used on lathe machine.

(B) Attempt any **TWO** of following :

8

- Differentiate between grey cast iron and white cast iron.
- Why aluminium is useful material in industry ?
- State thermosetting plastic and thermoplastics. Write two applications of each.

P.T.O.

2. Attempt any FOUR of following : 16

- (a) Write composition of materials : (any **two**)
 - (i) CS 50 Cr 1 V 20
 - (ii) FG 35 Si 15
 - (iii) Fe 410 CuK
 - (iv) 15 C 8 Pb 25 T 14
- (b) State composition and applications of Babbitt metal.
- (c) State four properties and applications of ceramic material.
- (d) Draw Fe-C phase transformation diagram and show critical temperatures on it.
- (e) List types of annealing process. Write four purposes of annealing.
- (f) Explain induction hardening process with two advantages and applications.

3. Attempt any FOUR of following : 16

- (a) What are different types of foundries ? Enlist two advantages and disadvantages of foundry process.
- (b) State four types of patterns. Draw a neat sketch of multipiece pattern.
- (c) State different types of allowances provided on patterns. Explain distortion allowance with neat sketch.
- (d) Enlist with meaning the standard accepted colour codes used for patterns.
- (e) List properties of moulding sand. Explain cohesiveness.
- (f) State types of cores. Explain balanced core with neat sketch.

4. Attempt any FOUR of following : 16

- (a) Draw a neat sketch of gating system. State following terms :
 - (i) Runner
 - (ii) Pouring basin
- (b) Explain with neat sketch true centrifugal casting.
- (c) Draw a neat sketch of hot chamber die casting and write two advantages and disadvantages.
- (d) Sketch and explain two casting defects with causes and remedies.
- (e) Explain oblique cutting with neat sketch.
- (f) State types of chips. Explain any one type of chip with neat sketch.

5. Attempt any FOUR of following : 16

- (a) Show nomenclature of single point cutting tool with neat sketch.
- (b) State four properties and purposes of cutting fluid.
- (c) Draw block diagram of lathe machine. Write function of tail stock and carriage.
- (d) How lathe machine is specified ?
- (e) Explain taper turning method by swiveling the compound rest method.
- (f) Write any four types of drilling machine. Draw a block diagram bench of drilling machine.

6. Attempt any FOUR of following : 16

- (a) State different operations performed on drilling machine. Explain counter boring with neat sketch.
 - (b) Compare between up milling and down milling.
 - (c) State any eight types of milling machine.
 - (d) Explain any one principal part of milling machine with neat sketch of column and knee type milling machine.
 - (e) List four types of milling cutter. Explain face milling cutter with neat sketch.
 - (f) State four operations performed on milling machine. Explain T-slot milling operation with neat sketch.
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