

GUJARAT UNIVERSITY**B. E. Sem III Mech./Auto. (Old) Examination
Manufacturing Process-I (M.P.-I)**

Thursday 27th December, 2007]

[Time : 3 Hours
Max. Marks : 100

- Instructions :** (1) Attempt all questions.
 (2) Answer to the two sections must be written in separate answer books.
 (3) Assume suitable data if require.
 (4) Figures to the right indicate full marks.
 (5) Draw neat sketch wherever required.

SECTION - I

- 1 (a) Give complete specification of a sliding, surfacing and screw cutting lathe. 6
 (b) Name the lathe operations. Explain any three. operations with neat sketch. 6
 (c) Differentiate centre lathe and capstan lathe. 4
- OR**
- 1 (a) Explain the tapes turning methods on a lathe with neat sketch. 6
 (b) Describe the operations of a Gear box mechanism of Head stock of a lathe. 6
 (c) Describe the Primary, Secondary and auxiliary motion of a machine tool. 4
- 2 (a) State the application of different cutters for different operation on a milling machine briefly. 6
 (b) Explain the dressing and turing of Grinding wheel with neat sketch. 6
 (c) Distinguish Drilling and Boring machine. 4
- OR**
- 2 (a) List different bonding materials used in manufacturing grinding wheel and explain any one of them. 6
 (b) Explain the drilling machine operations with neat sketch, Name the tools of these operations. 6
 (c) Name the types of milling cutters. Explain any one type with neat sketch. 4
- 3 Write short notes (any three) : 18
 (1) Milling machine attachments
 (2) Shapping machine operation
 (3) Alignment test of a lathe
 (4) Slotting machine
 (5) Upright drilling machine.

P. T. O.

SECTION II

- 4 (a) Classify the types of pattern? Describe any two types with neat sketch. 6
 (b) Differentiate simple moulding and machine moulding briefly. 6
 (c) List various types of defect found in cast parts. Explain any one defect in brief. 4
- OR**
- 4 (a) Explain the types of casting. Explain 'Investment Casting' with neat sketch. 6
 (b) What is machine moulding? Describe any two types of machine moulding with neat sketch. 6
 (c) Explain the importance of pattern material in the pattern shop briefly. 4
- 5 (a) Describe the term Pattern, Pattern making and Pattern maker. Explain the pattern layout with neat sketch. 6
 (b) Differentiate Natural, Synthetic and chemically coated moulding sand. 6
 (c) Explain destructive and Non destructive test of casting. 4
- OR**
- 5 (a) Name the types of foundry furnaces. Explain any one type of furnace with neat sketch. 6
 (b) Classify and explain the types of sand moulding process with neat sketch. 6
 (c) Distinguish sweep and skeleton pattern with neat sketch. 4
- 6 Write short notes any **three** : 18
 (a) Cores and cores making.
 (b) Pattern allowances
 (c) Sand conditioning
 (d) Mechanisation of foundry shop
 (e) Casting system.
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Machining & Casting Process

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- Instructions :** (1) Attempt all questions.
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SECTION - I

- 1 (a) What do you understand by basic machine tool ? Classify the Basic machine tools with respect to relative movement between tool and Job. 16
 (b) A triple start V thread of 15mm lead is to be cut on a lathe having the lead screw of 6mm pitch. Find the change gears required. If gears are available from 20 to 10 teeth in the step of 5 teeth.
 (c) What do you understand by lathe accessories and attachments ? Explain about different types of mandrels with its applications.

OR

- 1 (a) Differentiate between : 16
 (1) Steady rest and follower rest
 (2) 3-Jaw chuck and 4-Jaw chuck
 (3) Engine lathe and tool-room lathe.
 (b) What are standard taper ? A job having the length of 600 mm is turned to get lobe of 5 mm in 500 mm on the Job having the length of 400 mm. If the small diameter of Job is 80 mm. Find the large diameter of tapered part and amount of set over of the tail-stock. Is it possible to get same taper on the same job by swivelling the compound rest method ? Justify your answer.
 (c) Explain following terms :
 (1) SS and SC lathe
 (2) Primary secondary and Auxilliary cutting action.

- 2 (a) Classify the milling cutters and sketch any four standard milling cutters stating their application. 16
 (b) What do you understand by Indexing ? Describe the various methods of Indexing of the milling machine.
 (c) Explain the construction and working of unjiversal radial drilling machine with neat sketch.

OR

- 2 (a) Explain the procedure to cut T-slot on milling machine with neat sketch. 16
 (b) Sketch column and knee-type milling machine naming main parts and motions.
 (c) Define following terms :
 (1) Drilling (2) Reaming (3) Boring (4) Deep-drilling (5) Trepanning

P. T. O.

3 Write short notes (any three) :

18

- (1) "A45K7V" Explain the various terms for given designated grinding wheel as per IS.
- (2) Differentiate between shaper and Slotter
- (3) Work holding devices for planner & shaper
- (4) All geared head stock of lathe
- (5) Up-milling and down-milling
- (6) Centreless-grinding.

SECTION II

- 4 (a) What is permeability? What its importance? How the shape and size of sand grain affect the permeability of moulding sand. 16
- (b) Explain :
- (1) Double shrinkage allowance
 - (2) Below and Draw-spike
- (c) List different types of patterns used in foundaries. What are the situations in which single piece pattern, Split pattern and skeleton pattern are advantageously used?

OR

- 4 (a) Briefly explain the procedure to be followed in making a green sand mould by turn-over method. 16
- (b) Why core is used? Explain core print core and chaplet. Sketch different types of cores stating their applications.
- (c) Distingaish between Hand-moulding and machine moulding process.

- 5 (a) Describe casting defects stating their causes and remedies. 16
- (b) Describe the centrifugal casting process
- (c) Briefly describe the continuous casting

OR

- 5 (a) Briefly explain Inspection and cleaning of casting. 16
- (b) Explain lost-wax casting process
- (c) State advantages and limitations of Die-casting.

6 Write short notes (any three) :

- (1) Cupola (2) Foundary Tools (3) Pattern Allowances (4) Advantages & limitations of casting process (5) Gating system design. 18