

17043(M)

B. Tech 4th Semester Examination

Manufacturing Technology-I (CBS)

ME-401

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : This question paper carries five sections. Attempt any five questions selecting atleast one question each from section A, B, C & D. Section E is compulsory.

SECTION - A

1. (a) Why is it necessary for all engineers to be familiar with manufacturing processes? Justify your answer by giving some examples. What are the various types of in-gates that are normally used? (8)
(b) Define the following terms as related to casting: (i) cope, (ii) drag, (iii) bottom board, (iv) sprue, (v) gate and (vi) runner. (4)
2. (a) What are the typical situations in which the following casting processes are used? (i) Precision investment casting, (ii) Shell moulding, (iii) True centrifugal casting and (iv) Pressure die casting. (6)
(b) Discuss the various defects in sand casting: their causes and remedies. (6)

SECTION - B

3. (a) Briefly explain the principle of rolling with a neat sketch. Also discuss some defects that can be present in rolled products with their remedies. (4)

2

17043

- (b) Show by a neat sketch, the edge-bending operation with a die punch set in position, naming all the important elements of the set up. (4)
- (c) Explain why the whole of the material (billet) put in the container for extrusion is not extruded. (4)
4. (a) Give a line diagram of the various processes involved in the manufacturing of the steel sheet, starting from steel ingots. <https://www.hptuonline.com> (4)
(b) How does extrusion compare with rolling? Also describe the method of lubrication done in hot extrusion. (4)
(c) Explain what happens when the clearance between the punch and the draw die in the case of the deep-drawing operation is equal to the thickness of the blank. (4)

SECTION - C

5. (a) What are the kinds of joints that are normally employed for welding purposes? Give their sketches. (6)
(b) How is brazing different from welding? Why is brazing more extensively used in industrial practice? (6)
6. (a) Explain the TIG and MIG systems of arc welding. Give the applications of each. (6)
(b) Explain the process of friction welding with the help of neat sketch. Also mention their applications in industry. (6)

SECTION - D

7. (a) Explain stretch blow-moulding process with applications. (6)
(b) Describe the movement of powder particles during compaction in powder-metallurgy process. What features are responsible for the fact that powder does not flow and transmit pressure like a liquid? (6)

[P.T.O.]

8. (a) Explain the reinforced plastic moulding process. What are its applications? (6)
- (b) What do you understand by mixing and blending with reference to powder metallurgy? Give the advantages of powder-metallurgy parts. (6)

SECTION - E
(Compulsory Question)

9. Write short answers of the following:
- (a) What are the different operations in sequence which are involved in powder-metallurgy process?
- (b) What is the principle of resistance welding?
- (c) Name some of the welding defects.
- (d) Compare embossing and coining.
- (e) Explain drop forging operation.
- (f) Compare hot and cold extrusion process. (2×6=12)