

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14624

B. Tech 4th Semester Examination

Manufacturing Technology-I (N.S.)

ME-222

Time : 3 Hours

Max. Marks : 100

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 :** (i) Attempt all the sections. Each section carries equal marks.
- (ii) Attempt any one question from each section of A, B, C and D.
- (iii) Section E is compulsory.
- (iv) Assume, if there are any missing data.

SECTION - A

Attempt any one of the following questions: (20)

1. What are the major limitations of sand casting process and how are they overcome? What is meant by double shrinkage allowance? Briefly explain the application of chaplets. How does the dry compression strength vary with the moisture content? Show graphically.
2. In a foundry, it was required to obtain a cast metal with the following composition: carbon 3.20 to 3.60%; silicon 2.30 to 2.60%; manganese 0.60 to 0.80%; sulphur 0.08% maximum; and phosphorous 0.40 to 0.60%. If the following raw materials are available, estimate the best charge proportions.

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[P.T.O.]

	Carbon	Silicon	Manganese	Sulphur	Phosphorous
Pig iron 1	3.50	3.00	1.00	0.02	0.40
Pig iron 2	3.20	1.50	0.50	0.01	0.80
Pig iron 3	3.50	2.50	0.80	0.02	0.50
Scrap 1	3.50	1.80	0.60	0.08	0.50
Scrap 2	3.20	1.20	0.60	0.10	0.40
Ferro silicon		50.0			

SECTION - B

Attempt any one of the following questions: (20)

- Compare precision investment casting and shell moulding from the standpoint of process, product and applications. How is the semi-permanent mould different from a permanent mould?
- What is the significance of recrystallization temperature in metal working? What is meant by breakdown passes in rolling? List the advantages of forging of metals. Why is press forging preferred over hammer forging process?

SECTION - C

Attempt any one of the following questions: (20)

- What do you expect if during the wire drawing operation, the reduction attempted is more than the recommended value? Distinguish between bending and drawing in sheet metal operations? Why is a shear angle provided in a shearing operation? How do you provide shear angle in the case of punching and blanking operations? Explain with sketches.
- Explain the advantages and applications of oxy-acetylene welding. What are the advantages of AC equipment over DC equipment in arc welding? Explain the resistance welding process giving the equipment, parameters controlled and the applications.

SECTION - D

Attempt any one of the following questions: (20)

7. Is it possible to use a centre lathe for friction welding? Support your answer with reasons. What are the defects that are generally found in welding? Describe their cause and remedies.
8. Compare a shaper and planer in terms of their operation and type of work piece. Derive the expression for the area of cross-section of the chip in face milling.

SECTION - E

Attempt all the following questions: (2×10)

9. (i) State the essential ingredients of a moulding sand.
- (ii) What are the distinguishing features between a casting and a pattern?
- (iii) Describe the objectives of gating systems in any casting.
- (iv) State any two common green sand casting defects and give their causes and remedies,
- (v) What do you understand by core prints and chaplets?
- (vi) What are the differences between impact extrusion and cold extrusion forging?
- (vii) Why is an AC power supply not normally used in TIG welding process?
- (viii) What are the problems encountered with the use of coated electrodes?
- (ix) What are the various types of milling cutters that are used in milling?
- (x) How are the tools held in a shaper?