Writing anything except roll number on question paper will be deemed as an act of indulging in unfair means and action shall be taken as per rules.

4E050521

Roll No.: .....

Total No. of Pages: 2

4E050521

B. Tech. IV Semester End-Term Examination (Main), June-2022

Branch: Mechanical Engineering

4ME4-05: Manufacturing Processes

Time: 3 Hours **Maximum Marks: 105**

Instructions to Candidates:

The question paper is divided in three parts A, B & C.

(i) **Part-A:** 7 Basics/Fundamentals related questions (without choice).

(ii) **Part-B:** 5 Numerical/Analytical questions (with internal choice i.e. attempt one question either A or B from each question).

(iii) **Part-C:** 5 Descriptive/Analytical/Problem Solving/Design questions **(attempt any 3 out of 5)**.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination:

1. Nil 2. Nil

PART-A

(Basics/Fundamentals related questions)

All questions are compulsory

Q.1 **(a)** Differences between TIG and MIG welding processes. **[3]**

(b) Name the forging defects with cause and remedies. **[3]**

(c) What are the specific merits of cold working over hot working? **[3]**

(d) Differentiate forward and backward extrusion processes. **[3]**

(e) Elaborate the basic terminologies related to the casting process. **[3]**

(f) List out the desirable properties of molding sand. **[3]**

(g) Describes the different types of forming operations. **[3]**

PART-B

(Numerical/Analytical questions)

Q.2 **(A)** In a gating design, height of the sprue is 200 mm, cross sectional area of the sprue at the beginning is 650 mm2,discharge rate of liquid is 6.5x105 mm3/sec. Find the cross sectional area of the sprue at the bottom. **[6]**

OR

(B) Taking example of a simple product, give step by step, the method of investment casting. Give merits and limitations of this process. **[6]**

Q.3 (A) List out the various elements that comprise the gating system. Explain the functions of each. [6]

OR

(B) Explain the difference between soldering and brazing [6]

Q.4 (A) Classify the types of rolling mills and sketch them [6]

OR

(B) Explain stick welding process and its applications. [6]

Q.5 (A) Categorize in detail rolling defects and their causes and remedies. [6]

OR

(B) Describe with neat sketches the MIG welding method and give its specific applications. [6]

Q.6 (A) Explain with neat sketches of fullering and drawing down operations. [6]

OR

(B) Describe the difference between a foil, a sheet, and a billet. [6]

PART-C

(Descriptive/Analytical/Problem Solving/Design questions)

(attempt any 3 out of 5) (Q.7 to Q.11)

Q.7 Explain the process of thermite welding with neat sketch. Write its applications with advantages and disadvantages. https://www.btubikaner.com [18]

Q.8 List out the different forging operations. Explain drop forging operation with neat sketch. [18]

Q.9 Explain the friction welding process giving the equipment, parameters controlled and its advantages. [18]

Q.10 Explain with the help of neat sketches the process of sand casting. Also state its applications and advantages. [18]

Q.11 Define powder metallurgy. What are the various important techniques for compacting of metal powder? [18]

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