

31N0005/31N1003/
31N1103

Roll No. _____

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31N0005/31N1003/31N1103
B. Tech. III - Sem. (Main) Exam., May - 2023
Aeronautical Engineering
3AR4-05 Manufacturing Processes
Common to AR, ME, MX

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Part - A: Short answer questions (up to 25 words) 10×2 marks = 20 marks.
All ten questions are compulsory.

Part - B: Analytical/Problem solving questions 5×4 marks = 20 marks.
Candidates have to answer five questions out of seven.

Part - C: Descriptive/Analytical/Problem Solving questions 3×10 marks = 30 marks.
Candidates have to answer three questions out of five.

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.
(Mentioned in form No. 205)

1. NIL

2. NIL

PART - A

- Q.1 Differentiate between a casting and pattern.
- Q.2 Name desirable properties of moulding sand.
- Q.3 What are the materials used for preparing patterns?
- Q.4 List down the functions performed by the coating of welding electrode.
- Q.5 Define wire drawing process.

- Q.6 Differentiate between open and close die forging.
- Q.7 List any five welding defects.
- Q.8 Differentiate between TIG and MIG welding.
- Q.9 What are the advantages of hot and cold working of metals?
- Q.10 List the properties of powder processed materials.

PART - B

- Q.1 Describe various types of pattern allowances.
- Q.2 Describe the method used for determining the permeability of moulding sand.
- Q.3 Explain with the help of neat sketches any five casting defects with their causes and remedies.
- Q.4 Explain the principle of submerged arc welding with the help of neat sketch. Discuss its applications, merits and demerits. <https://www.btubikaner.com>
- Q.5 What is heat affected zone? What are its implications in arc welding process?
- Q.6 Explain with sketches the difference between direct and indirect extrusion. List the variables which affect the extrusion process performance.
- Q.7 With the help of neat sketch explain sintering process in connection with powder metallurgy.

PART - C

- Q.1 With neat sketch explain investment casting process and their advantages.
- Q.2 Explain the process of nucleation and grain growth in metal casting. What is directional solidification?
- Q.3 Briefly describe the principle, working and applications of laser beam welding.
- Q.4 What do you understand by rolling? What are its characteristics?
- Q.5 Briefly explain the joining processes of soldering, brazing and braze welding. Clearly bring out the differences between them and give specific applications of each type.