

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Mechanical Engineering



Study Programme	: Bachelor of Science Honours in Engineering
Name of the Examination	: Final Examination
Course Code and Title	: DMX3206 Introduction to Manufacturing Processes
Academic Year	: 2024/25
Date	: 03 rd March 2026
Time	: 0930 hours -1230 hours
Duration	: 3 hours

General instructions

1. Read all the instructions carefully before answering the questions.
 2. This question paper consists of **Five (05)** questions and answers all questions.
 3. The answer to each question should commence from a new page.
 4. This is a Closed Book Test (**CBT**).
 5. Answers should be in clear handwriting.
 6. Do not use Red colour pen.
 7. Write the name of the question paper with the course code on the first page of the answer book.
 8. Write your index number (not the registration number) on every page of your answer book.
 9. Write at the bottom of the first page of your answer book clearly the question numbers you answered.
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|----|-----|--|----------|
| 01 | i | a) Explain the steps of the sand casting process with the help of suitable sketches. | 06 marks |
| | | b) Mention the materials required for sand casting process. | 05 marks |
| | ii | a) What are the various types of pattern allowances in sand casting? | 03 marks |
| | | b) Why are these allowances essential in pattern making? | 03 marks |
| | iii | What are the major limitations of the sand casting process? | 03 marks |
| 02 | i | a) What is a gating system in metal casting? | 03 marks |
| | | b) Explain the functions and components of a gating system with suitable sketches. | 05 marks |
| | ii | a) What are the various types of cores used in metal casting? | 04 marks |
| | | b) Explain the importance of core prints. | 03 marks |
| | iii | Describe the different types of defects encountered in casting processes. | 05 marks |
| 03 | i | Discuss advantages, limitations, and applications of Investment Casting, and Pressure Die Casting. | 06 marks |
| | ii | a) Briefly explain the concept of Powder Metallurgy (P/M). | 03 marks |
| | | b) Describe the sequence of the four basic steps involved in Powder Metallurgy (P/M). | 06 marks |
| | iii | Evaluate the advantages and disadvantages of powder metallurgy compared to traditional manufacturing processes. | 05 marks |
| 04 | i | a) What are the advantages and disadvantages of metal forming? | 03 marks |
| | | b) Briefly explain the load-extension curve for both ductile and brittle materials in metal forming processes. | 05 marks |
| | ii | a) Differentiate between hot working and cold working of metals. | 04 marks |
| | | b) Discuss the advantages and disadvantages of hot working process with reference to temperature effects on material properties. | 05 marks |
| | iii | What are the various types of presses and forging machines used in metal forming? | 03 marks |
| 05 | i | a) Explain the fundamental difference between blanking and piercing. | 04 marks |
| | | b) Describe the basic mechanism used for these operations. | 05 marks |
| | ii | What is the importance of the "neutral axis" in bending operations? | 03 marks |
| | iii | a) Briefly explain the process of deep drawing. | 04 marks |
| | | b) What is the role of pressure pads in deep drawing? | 04 marks |

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