



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	: 2023/24
Date	: 09 th March 2025
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 Briefly explain the metal casting process including its capabilities, limitations and the materials used. 06 marks
- ii Describe the following terms used in metal casting with the aid of sketches. 08 marks
- Moulding box
 - Gating system
 - Runner
 - Risser
- iii Identify the types of pattern allowances provided in mould making and explain the purpose of two such allowances. 06 marks
- 02 i a) What are the general defects commonly encountered in sand casting processes? 03 marks
- b) Briefly describe one defect mentioned above. 03 marks
- ii a) What are the primary requirements for producing a good die casting? 02 marks
- b) Explain the meaning of the term "investment" with respect to investment casting. 03 marks
- iii Why are risers not as useful in die casting as they are in sand casting? 04 marks
- iv State the functions of a die casting machine. 05 marks
- 03 i Briefly explain the possibilities of using a discarded plastic object as raw material in plastic molding processes. 04 marks
- ii What are the main differences between the positive mould, semi-positive mould and open flash mould? 06 marks
- iii Describe briefly the production steps involved in making powder-metallurgy parts. 06 marks
- iv What are the advantages and limitations of the powder metallurgy process? 04 marks
- 04 Describe the following in the bulk forming process with neat sketches. 4 x 05 marks
- (a) Upsetting
- (b) Drawing down
- (c) Setting down
- (d) Bending
- 05 i How does sheet-metal forming differ from forging? 04 marks
- ii Describe the functions of pressure pads in a deep drawing? 04 marks
- iii Differentiate between blanking and piercing in sheet metal work. 04 marks
- iv Using the following figure, find an expression for diameter **D** of the blank in part (b) to produce the item shown in part (a) in terms of the given variables. 08 marks
- If **d=100mm** and **h=40mm**, find the value of diameter (**D**).

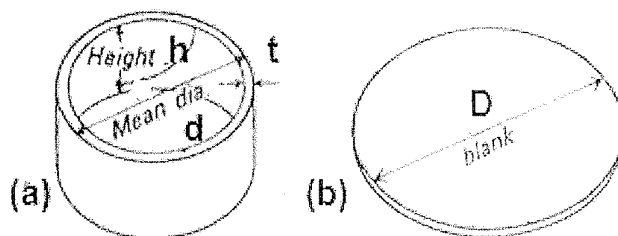


Figure 05(iv): Blank drawn to form a cup