



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014**

COURSE NAME : MANUFACTURING TECHNOLOGY
COURSE CODE : BNM 20102
PROGRAMME : 2 BNK
EXAMINATION DATE : JUNE 2014
DURATION : 2 HOURS
INSTRUCTION : ANSWER FOUR (4) QUESTION ONLY

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

- Q1**
- (a) State the reason why friction generally undesirable in metal forming operations?
(5 Marks)
 - (b) Describe the reasons why the bulk deformation processes are important commercially and technologically?
(4 Marks)
 - (c) Differentiate the method of direct and indirect metal extrusion.
(4 Marks)
 - (d) Viscosity is an important property of a polymer melt in plastics shaping processes. Carry out the parameters of viscosity in polymer melt?
(3 Marks)
 - (e) Explain the condition of viscoelasticity in polymer melt.
(3 Marks)
 - (f) What are the **FOUR (4)** of the general considerations that product designers must keep in mind when designing components out of plastics?
(6 Marks)
- Q2**
- (a) Identify the advantages of shape casting processes.
(4 Marks)
 - (b) Draw up and differentiate the specification of an open mold and a closed mold between both types.
(8 Marks)
 - (c) Describes the factors that affect the fluidity of a molten metal during pouring into a mold cavity?
(4 Marks)
 - (d) Construct with detail the cooling curve for pure metal after pouring.
(9 Marks)

- Q3**
- (a) Draw a neat figure of a force diagram showing the geometric relationship between all the forces acting on the chips in orthogonal cutting. (8 marks)
 - (b) By using illustrations, compare and explain two forms of milling in the peripheral milling. Describe the geometry of the chip formed by this process. (6 marks)
 - (c) List **THREE (3)** processes that can be done by the drill machine other than making a hole. (3 marks)
 - (d) In a production turning operation, the foreman has decreed that a single pass must be completed on the cylindrical work piece in 5.0 min. The piece is 400mm long and 150 mm in diameter. Using a feed = 0.30 mm/rev and a depth of cut = 4.0 mm, what cutting speed must be used to meet this machining timing? (8 marks)
- Q4**
- (a) Define the green compact in pressing for powders metallurgy. (4 marks)
 - (b) State of the reasons for the commercial importance of powder metallurgy technology. (4 marks)
 - (c) List and sketch **FIVE (5)** particle shapes for screen mesh in powder metallurgy. (5 marks)
 - (d) Sketch and explain the three basic steps in the conventional powder metallurgy shaping process? (12 marks)

- Q5**
- (a) Define the term of fusion weld. (4 marks)
 - (b) Name and sketch the **FIVE (5)** joint types. (5 marks)
 - (c) Why joining process is important? Give **THREE (3)** reasons with example (6 marks)
 - (d) Differentiate thermite welding and resistance welding with its principle by using schematic diagram and give **TWO (2)** examples of applications. (6 marks)
 - (e) List **FOUR (4)** types of welding processes classified as fusion welding and non-fusion. (4 marks)
- Q6**
- (a) Define the mechanical assembly. (3 marks)
 - (b) Why mechanical assembly importance for today industry? State **FIVE (5)** reason. (5 marks)
 - (c) Identify **FOUR (4)** general principles and guidelines for DFA (Design for assembly). (4 marks)
 - (d) Under what circumstances would bolted joint cause over tightening? (6 marks)
 - (e) Draw up and list **FOUR (4)** types of basic rivets. (4 marks)
 - (f) Show how the snap fit processes before and after assembly? (3 marks)

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