



**UNIVERSITI TUN HUSSEIN ONN  
MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2017/2018**

COURSE NAME : MANUFACTURING TECHNOLOGY  
COURSE CODE : BDA 30502  
PROGRAMME : 3 BDD  
EXAMINATION DATE : DECEMBER 2017 /JANUARY 2018  
DURATION : 2 HOURS  
INSTRUCTION : 1. ANSWER ALL QUESTION  
FROM SECTION A  
2. ANSWER **THREE (3)**  
QUESTIONS FROM  
**SECTION B**

**TERBUK A**

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

**SECTION A**

- Q1** (a) There are different ways of categorizing the wide variety of available joining processes. According to classification by the American Welding Society (AWS), joining processes fall into three major categories i.e welding, adhesive bonding and mechanical fastening. **Compare** these three various joining method in term strength and easy to manufacture characteristics.  
(7 marks)
- (b) Some types of Welding processes can be classified into both the fusion and the solid-state categories. **Distinguish** the fundamental process for both categories.  
(8 marks)
- (c) Shielded metal-arc welding (SMAW) is one of the oldest, simplest, and most versatile joining processes. About 50% of construction, shipbuilding, pipelines, and maintenance work industrial currently performed by this process. **Illustrate** and use a schematic diagram to show the equipment and the shielded metal-arc welding process.  
(10 marks)

**SECTION B**

- Q2** (a) Briefly **describe** and **differentiate** the melting process, pouring process and solidifying process in casting  
(7 marks)
- (b) **Examine** FOUR (4) the properties of mould sands and describe and importance in sand casting.  
(8 marks)
- (c) After a cast is solidified, it was found that it has defects. By the aid of sketch, **distinguish** FIVE (5) common types of defects that can occur in general and sand casting. **State** the cause of each defect.  
(10 marks)

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- Q3** (a) Please **compare** the Direct and Indirect extrusion works with the aids of diagram. (8 marks)
- (b) With the aid of a diagram **examine** the compression molding process. (7 marks)
- (c) In metal forming , we can distinguish three temperature ranges used: cold, warm and hot working.
- (i) **Compare** and **differentiates** between Hot and Cold Working of metals. (6 marks)
- (ii) **Discuss** the advantages and disadvantages for both processes. (4 marks)
- Q4** (a) **Differentiate** the major independent and dependent variables that influence the cutting process. (8 marks)
- (b) **Illustrate** of a seven element of single point tool geometry and tool signature convention on orthogonal cutting. (7 marks)
- (c) In an orthogonal cutting operation, the cutting tool has a rake angle of  $12^\circ$ . The depth of cut was 1.25 mm and the chips produced was having thickness of 1.75 mm. The diameter of the work material was 42 mm and rotates at 1200 revolutions per minute. The feed rate of the tool was 0.15 mm/rev. **Evaluate** the following:
- (i) Chip thickness ratio. (3 marks)
- (ii) Shear plane angle. (3 marks)
- (iii) Time taken to turn 125 mm length out of total length of 275 mm. (4 marks)

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- Q5 (a) The pressed powder is known as a green compact. **Distinguish** the properties of green compact in manufacturing concept. (4 marks)
- (b) Powder Metallurgy (PM) is the important process in manufacturing to produce a good manufacturing product. **Illustrate** THREE (3) steps PM process and the product example. (7 marks)
- (c) **Interpret** the characteristics and advantages of plastic injection moulding product and give THREE (3) examples of products that are normally made by that technique. (9 marks)
- (d) With the aid of appropriate diagram, **illustrate** the step of blown calendaring (Blown film) process and list ONE (1) example of products that are normally made by that technique. (5 marks)

- END OF QUESTION -

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