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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016**

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COURSE NAME : MANUFACTURING TECHNO.
COURSE CODE : BDA 30502
PROGRAMME : 3 BDD
EXAMINATION DATE : JUNE/JULY 2016
DURATION : 2 HOURS
INSTRUCTION :
1. ANSWER **ONE** QUESTION
FROM **SECTION A**
2. ANSWER **ALL** QUESTIONS
FROM **SECTION B**

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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SECTION A

- Q1** (a) Identify at least **THREE (3)** sector industry area and discuss some of the reasons why machining is commercially important. (7 marks)
- (b) Discuss **FOUR (4)** advantages and disadvantages of machining on scope of industries. (8 marks)
- (c) A slab milling operation is performed to finish the top surface of a steel rectangular work piece 250 mm long by 70 mm wide. The helical milling cutter, which has a 80 in diameter and eight teeth, is set up to overhang the width of the part on both sides. Cutting conditions are: $v = 50$ m/min, $f = 0.12$ mm/tooth, and $d = 3.00$ mm.
- Determine:
- a) The time to make one pass across the surface
- b) The material removal rate during cutting process (10 marks)
- Q2** (a) Describe with the aid of diagram the processing step involved in producing a product in Powder Metallurgy (PM). (7 marks)
- (b) Powder Metallurgy (PM) is the important process in manufacturing to produce a good product.
- a) Explain about the PM process
- b) Explain at least **FOUR (4)** importance of PM (8 marks)
- (c) Discuss and sketching in detail sintering metal powder molecules bonding process in Powder Metallurgy (PM)? Describe the sintering processes in detail. (10 marks)

- Q3**
- (a) With the aid of a diagram, differentiate the Rolling process and give **TWO (2)** examples of Intermediate rolled form and Final rolled form (5 marks)

 - (b) Compression molding process is one of the best manufacturing process that involved punch, cavity and ejector for producing the part. With the aid of a diagram illustrate the step of the process? (5 marks)

 - (c) Explain Direct and Indirect extrusion works with the aid of diagrams. (7 marks)

 - (d) Analyze at least **FOUR (4)** comparison differences between Hot Extrusion and Cold Extrusion (8 marks)

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SECTION B

- Q4** (a) Briefly elaborate the basic principle of fusion welding? (5 marks)
- (b) Demonstrate in detail at least **FIVE (5)** equipments a typical Arc Welding Process complete with aid of diagram. (10 marks)
- (c) With the aid of a diagram, investigate the impression die and discuss **THREE (3)** processing step on how it works. (10 marks)
- Q5** (a) There are two types of plastics namely Thermoplastics and Thermosets. Distinguish the differences between them in an appropriate table. (4 marks)
- (b) Describe the characteristics and limitations of plastic injection moulding product and give **THREE (3)** examples of products that is normally made by such technique?. (5 marks)
- (c) Describe the blown calendaring (Blown-film) process and give **THREE (3)** examples of products that are normally made by such technique. (6 marks)
- (d) With the aid of appropriate diagram, illustrate in details the plastic extrusion process? (10 marks)

- Q6** (a) In turning operation, **FIVE (5)** basic cutting techniques have been used widely in industry to perform shape and contour. Illustrate in figure and label completely. (5 marks)
- (b) In machining cutting tool theory, there is 2 methods of cutting called Orthogonal cutting and oblique cutting that widely used in industries. Compare at least **FOUR (4)** assumptions between these two (8 marks)
- (c) A company made an investigation of single point tool of their machining department. They found a majority of the problems are tool failure obviously occurred during the cutting process.
- i. Discuss **THREE (3)** mode of failures
 - ii. Draw a diagram of tool failure/wear
 - iii. Examine and suggest an option to reduce tool failure during machining.
- (12 marks)

- END OF QUESTION -

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