



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION SEMESTER I SESSION 2010/2011

COURSE NAME : MODERN MACHINING
COURSE CODE : BDD 4073
PROGRAMME : 4 BDD
EXAMINATION DATE : NOVEMBER / DECEMBER 2010
DURATION : 3 HOURS
INSTRUCTION : **SECTION A**
ANSWER ALL QUESTIONS
SECTION B
ANSWER ONE (1) QUESTION

THIS PAPER CONTAINS FOUR (4) PAGES

SECTION A : Answer all (4) questions

- Q1 a) Briefly describe what is meant by Electrodischarge Machining (EDM)
(4 marks)
- b) EDM process can be divided in 3 phases. Describe each phase complete with relevant diagram.
(8 marks)
- c) Why is flushing important in EDM process? With clear diagram describe the 3 flushing system in EDM, describe the importance of each system.
(8 marks)
- Q2 a) What are the basic principles of Laser Beam Machining (LBM). Describe them with relevant diagrams.
(5 marks)
- b) What are the advantages and disadvantages of LBM?
(5 marks)
- c) Describe the differences between LBM and Electron Beam Machining (EBM)
(10 marks)
- Q3 a) List down applications of Plasma Arc Machining (PAM)
(5 marks)
- b) Discuss the PAM process with simple diagram. What are the differences between Plasma Arc and Plasma Jet?
(10 marks)

- c) Describe the following process of PAM
 - i) Profile Cutting of flat plate
 - ii) Groove

(5 marks)

- Q4 a) Briefly discuss why Material Removal Rate (MRR) is important in machining and provide one example in advanced machining processes.

(4 marks)

- b) Electron Beam Machining (EBM) are useful for a number of applications. Name and briefly discuss about them.

(8 marks)

- c) Draw a simple clear diagram of Waterjet Machining (WJM) and detail out the differences between Abrasive Water Jet Machining (AWJM)

(8 marks)

SECTION B : ANSWER ONE (1) QUESTION ONLY

Q5 A clothing company makes uniform for the army and police. The company need to cut large quantity of fabrics. The fabrics are strong and wear resistant and are very difficult to cut. What non-conventional process would you recommend to the company to ensure quick, cheap and accurate cuts ? Justify your answer and provide detail justifications. Describe the parameters that are critical in such a process.

(20 marks)

Q6 A researcher needs to prepare some specimens from sheet metal titanium. The specimen must have accurate dimensions and complex in shape. Name **TWO (2)** type of possible non-conventional machining process to achieve this. Describe the process and discuss how accuracy and metal characteristics of sample be maintained.

(20 marks)

Q7 Sketch a detail diagram of an Ultrasonic Machining (USM) Process.

a) Describe the main operation in this non conventional machining process.

(10 marks)

b) Discuss briefly about the importance of selecting the right tool in USM.

(10 marks)