



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

PEPERIKSAAN AKHIR SEMESTER II SESI 2008/2009

NAMA MATA PELAJARAN : PEMESINAN MODEN
KOD MATA PELAJARAN : BDD 4073
KURSUS : 4 BDD
TARIKH PEPERIKSAAN : APRIL 2009
JANGKA MASA : 3 JAM
ARAHAN : JAWAB **SEMUA EMPAT** (4)
SOALAN DI BAHAGIAN A DAN
SATU (1) SOALAN DI BAHAGIAN B

KERTAS SOALAN INI MENGANDUNGI TIGA (3) MUKA SURAT

SECTION A: Answer all four (4) questions

- Q1**
- a) Why the high speed machining process is important over non-traditional machining?
(5 Marks)
 - b) What are the main performances features required when designing the high speed machine system?
(5 Marks)
 - c) Explain with a sketch of Electric Discharge Machining (EDM) process. What is the function of die electric medium in EDM process?
(5 Marks)
 - d) Propose different flushing techniques in EDM process (with sketch).
(5 Marks)
- Q2**
- (a) How Abrasive Jet Machining (AJM) is performed? Explain with a schematic figure.
(5 Marks)
 - (b) What are the advantages and limitations of Abrasive Jet Machining?
(5 Marks)
 - (c) What are the differences between water jet cutting, abrasive water jet cutting, and abrasive jet cutting?
(10 Marks)
- Q3**
- (a) How does laser machining process work to machine a work piece? Explain with a sketch of the process.
(5 Marks)
 - (b) What are advantages and disadvantages of laser machining process?
(5 Marks)
 - (c) What does the laser machining process differ from electron beam machining? Justify your answers in terms of material removal mechanism and their application.
(10 Marks)
- Q4**
- (a) How does the Ultrasonic Machining (USM) process work? Explain briefly with a schematic figure of the process.
(5 Marks)
 - (b) Describe the types of tool material used for the tool tip in USM?
(5 Marks)
 - (c) Where the application of plasma arc machining process is used and identify **TWO** (2) major advantages of plasma arc cutting.
(10 Marks)

SECTION B: Answer ONE (1) question only

- Q5** A furniture company that makes upholstered chairs and sofas must cut a large quantity of fabrics. Many of these fabrics are strong and wear-resistant, which make them difficult to cut. What nontraditional process would you recommend to the company for this application? Justify your answer by indicating the characteristics of the process that make it attractive. (20 Marks)
- Q6** For the following application, identify one or more nontraditional machining processes that might be used, and give your arguments to support the selection. Assume that either the part geometry or the work material (or both) preclude the use of conventional machining.
- (a) The application is a matrix of 0.1 mm diameter holes in a plate of 3.2 mm thick hardened tool steel. The matrix is rectangular, 75 by 125 mm with the separation between holes in each direction = 1.6 mm. (10 Marks)
- (b) The application is a through-hole in the shape of the letter L in a 12.5 mm thick plate of glass. The size of the "L" is 25 by 15 mm and the width of the hole is 3 mm. (10 Marks)
- Q7** Much of the work at the Cut-Anything Company Sdn. Bhd involves cutting and forming of flat sheets of fiber-glass for the pleasure boat industry. Manual methods based on portable saws are currently used to perform the cutting operation, but production is slow and scrap rates are high. The foreman says that the company should invest in a Plasma Arc Cutting (PAC) machine, but the plant manager thinks it would be too expensive. Give your opinions and justify your answer by referring to the characteristics of the process that make PAC attractive or unattractive in this application. (20 Marks)