



## **UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

### **PEPERIKSAAN AKHIR SEMESTER II SESI 2009/2010**

NAMA MATA PELAJARAN : PROSES PEMESINAN MODEN  
KOD MATA PELAJARAN : BDD 4073  
KURSUS : BDD  
TARIKH PEPERIKSAAN : APRIL/MEI 2010  
JANGKA MASA : 3 JAM  
ARAHAN : JAWAB SEMUA SOALAN

KERTAS SOALAN INI MENGANDUNGI TIGA (3) MUKA SURAT

- S1**
- (a) What is the main function of the flushing in Electric Discharge Machining (EDM)? With the help of a sketch, explain the principle of four (4) types of flushing. (10 marks)
- (b) Identify the significant advantages of EDM. (5 marks)
- (c) An EDM operation is being performed on Tungsten.
- Determine:
- (i) The amount of metal removed in the operation after one hour at a discharge amperage = 20 amps.
- (ii) If the work material were Tin, determine the amount of material removed in the same time. Use metric units and express the answer in  $\text{mm}^3$ .  
(Given:  $K = 664$  in SI unit,  $T_m = 3410^\circ\text{C}$  for Tungsten,  $T_m = 232^\circ\text{C}$  for Tin) (5 marks)
- S2**
- (a) Describe the first definition of High Speed Machining (HSM) (2 Marks)
- (b) High Speed machining (HSM) has been widely used in Mould and Die industry which requires dealing with finishing of hard materials. List and briefly explain four (4) categories of parts/components which normally been machined by HSM. (8 Marks)
- (c) With the help of a sketch (*with block diagram – A to C*), explain the principle of machining and finishing of HSM from blank hardened (*after heat-treatment*) until finishing. (10 marks)
- S3**
- (a) Describe the term of 'What is Laser'? (2 marks)
- (b) List three (3) working material parameters which affecting the quality of laser-drilled holes (3 marks)
- (c) List five (5) limitations of Laser Beam Machining (LBM) (5 marks)
- (d) Describe the design considerations for LBM (6 marks)

BDD 4073

- (e) List two (2) types of metals which are more difficult to cut by Laser due to their ability to reflect the laser light as well as absorb and conduct heat. (2 marks)
- (f) List two (2) types of Solid Laser which has been used in LBM process (2 marks)
- S4**
- (a) With the help of a sketch, describe the principle of Jet Nozzle in Water Jet Machining (WJM) (5 marks)
- (b) List five (5) main factors which normally effects the good cutting quality in WJM (5 marks)
- (c) List five (5) advantages of WJM (5 marks)
- (d) With the help of a sketch, explain what is the difference between Water Jet Machining (WJM) and Abrasive Water Jet Machining (AWJM)? (5 marks)
- S5**
- (a) What is Chemical Machining? List three (3) types of Chemical Machining (7 marks)
- (b) Describe the function of Etching and list three (3) factors in selection of Etchant material (7 marks)
- (c) Which of the advanced machining processes causes thermal damage? What is the consequence of such damage to workpiece? (6 marks)