

SULIT



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

PEPERIKSAAN AKHIR SEMESTER II SESI 2011/2012

NAMA KURSUS : PROSES PEMBUATAN
KOD KURSUS : DDA 3072
PROGRAM : 3 DDM
TARIKH PEPERIKSAAN : MAC 2012
JANGKA MASA : 2 ½ JAM
ARAHAN : JAWAB EMPAT (4) SOALAN
DALAM BAHAGIAN A DAN DUA
(2) SOALAN DALAM BAHAGIAN
B

KERTAS SOALAN INI MENGANDUNGI LIMA (5) MUKA SURAT

SULIT

TERJEMAHAN**Part A: Answer four (4) from five questions.**

- S1** Machining is a process of removing unwanted material from its original workpiece and the operation is performed when relative motion between the tool and work does exist.
- (a) From your understanding, explain the difference between roughing and finishing operations in machining. (4 marks)
 - (b) Name and briefly describe the three (3) types of chips that are produced during machining. (4 marks)
 - (c) Draw neat sketch of single point tool. (8 marks)
 - (d) List down three (3) types of milling as an alternate to surface grinding. (4 marks)
- S2**
- (a) Briefly explain the function of the following items used in sand casting process:
 - (i) runner,
 - (ii) core,
 - (iii) riser. (4 marks)
 - (b) Draw sketch and explain any one type of expendable molding process. (8 marks)
 - (c) Name the types of patterns used in casting with sketch. (4 marks)
 - (d) There are several defects encountered in casting processes. Name and sketch them. (4 marks)

- S3**
- (a) Indicate four (4) of the advantages of cold working relative to warm and hot working. (4 marks)
 - (b) What are the differences between bulk deformation processes and sheet metal processes? (3 marks)
 - (c) One way to classify forging operations is by the degree to which the work is constrained in the die. By this classification, name the three basic types of the dies. (3 marks)
 - (d) What is the difference between a blank and piercing process in sheet metal working process? (6 marks)
 - (e) What is springback in sheet metal bending? (4 marks)
- S4**
- (a) What is calendaring in plastic? (4 marks)
 - (b) What are thermoplastic and thermoset plastics? (5 marks)
 - (c) Name the process involved in powder metallurgy to produce products. Explain each of them. (5 marks)
 - (d) What are four (4) of the advantages and disadvantages of Powder Metallurgy process? (6 marks)

- S5**
- (a) Define the term fusion weld. (4 marks)
 - (b) Name the five (5) joint types and sketch each of them. (6 marks)
 - (c) What are the desirable properties of a metal that would provide good weldability for resistance welding? (4 marks)
 - (d) Why mechanical assembly can be preferred than welding? Where such assembly can be used. (6 marks)

Part B: Answer any two (2) from three questions.

S6 In a drilling operation, a 12.5 mm diameter twist drill is used to drill on a low-carbon steel workpiece. The hole is a through hole at a depth 40 mm and the point angle is 118° . The cutting speed is set to 28 m/min and the feed is at 0.4 mm/rev. Determine:

- (a) The cutting time to completely produce the hole, and
- (b) Metal removal rate of the drilling operation after the drill bit reaches full length.

(10 marks)

S7 A work material is low carbon steel and turned to final size to 45 mm and 200 mm length. The initial size of the work material is 50 mm and 200 mm length. The tool is positive rake angle with 12 degree. The work material rotates at 1200 revolutions per minute. The tool moves at 0.30 mm /rev and depth of cut is 1.0 mm. The final chip thickness after turning is 1.50 mm. Calculate the following.

- (a) Shear angle.
- (b) Time taken to machine to 45 mm diameter.
- (c) The horse power developed, if the cutting force is 275 Newton.
- (d) Volume of material removed.

(10 marks)

S8 A slab milling operation is performed on the top surface of a medium carbon steel rectangular workpiece which is 300 mm long by 70 mm wide. The milling cutter which has 6 teeth and 70 mm in diameter is set to overhang the width of the part on both sides. The cutting speed is 80m/min, the chip load is 0.2 mm/tooth, and the depth of cut is 3.0 mm. Determine:

- (a) The time to make one pass across the surface and,
- (b) The maximum metal removal rate during the machining.

(10 marks)