UNIVERSITI TUN HUSSEIN ONN MALAYSIA

PEPERIKSAAN AKHIR
SEMESTER I
SESI 2010/2011

NAMA KURSUS	:	TEKNOLOGI PEMBUATAN
KOD KURSUS	:	BDA 3052
PROGRAM	:	3 BDD
TARIKH PEPERIKSAAN	:	NOVEMBER / DISEMBER 2010
JANGKA MASA	:	2 JAM 30 MINIT
ARAHAN	:	JAWAB **EMPAT (4)** DARIPADA LIMA (5) SOALAN DI BAHAGIAN **A** DAN JAWAB **DUA (2)** DARIPADA TIGA (3) SOALAN DI BAHAGIAN **B**

KERTAS SOALAN INI MENGANDUNGI EMPAT (4) MUKA SURAT

TERJEMAHAN

BAHAGIAN A (80 MARKS):

This section contains **FIVE (5)** questions. Choose and answer any **FOUR (4)** questions **ONLY.**

S1   (a)   What properties the quality of a sand should have in casting process?

(4 marks)

(b)   What are all defect that are found in sand casting process?

(4 marks)

(c)   Explain with the aid of sketch the shell molding process.

(8 marks)

(d)   What are all the patterns used in a casting process?

(4 marks)

S2   (a)   Draw a neat figure showing various angles in a single point tool.

(6 marks)

(b)   Dry machining is being considered by machine shop because of certain problems inherent in the use of cutting fluids. What are those problems associated with the use of cutting fluids?

(5 marks)

(c)   List down the three (3) types of conventional machining in material removal processes other than turning and milling operations.

(3 marks)

(d)   Material removal processes are desirable and necessary in manufacturing operation. Explain briefly three (3) reasons why material removal processes are important.

(6 marks)

S3 (a) What are the differences between bulk deformation processes and sheet metal processes?

(3 marks)

(b) What is spring back in a sheet metal bending?

(4 marks)

(c) Indicate four (4) advantages of cold working relative to hot working.

(4 marks)

(b) Explain briefly with a different forging process involved in bulk deformation process.

(5 marks)

(c) Differentiates between forward and back ward extrusion. Explain each one of them.

(4 marks)

S4 (a) Explain the difference between resistance seam welding and resistance spot welding with figure.

(5 marks)

(b) How does the weldability of steel change as its carbon content increases? Explain your answer.

(4 marks)

(c) If you are designing a joint that needs to be strong and yet needs to be disassembled a few times during the product life, what kind of joint would you use? Explain your answer briefly.

(7 marks)

(d) What is the heat affected zone (HAZ) in a fusion weld?

(4 marks)

S5 (a) What is die swell in extrusion process?

(3 marks)

(b) Explain angle of repose in powder metallurgy process.

(3 marks)

(c) What are all the factors to be considered while designing powder products?

(5 marks)

(c) Explain any one process of making powder form from solid metal.

(9 marks)

BAHAGIAN B (20 MARKS):

This section contains **THREE (3)** questions. Choose and answer any **TWO (2)** questions **ONLY.**

S6   A work material of 45 mm diameter and length 400 to be turned up to 300 mm. The spindle rotates at 1200 revolutions per minute. The cutting tool is carbide and rake angle is 12 degree. The feed rate is 0.25 mm /rev and depth of cut is 1.8 mm. After turning, the chip produced was continuous chip and thickness was measured as 0.6 mm.

Calculate the following:

(i)   chip thickness ratio,

(ii)   shear angle,

(iii)   time taken to machine 300 mm length,

(iv)   shear strain

(v)   material removal rate

(10 marks)

S7   In the experiment, the work material is AISI 4340 steel and the tool used is ceramic. The feed is 0.12 mm/rev. When the machine is set to run at 128 m/min, the tool life is found to be 45 min. When the machine is set to run at 152 m/min, the tool life is found to be 35 min. Assume that the cutting speed tool life relationship is the type of $VT^n = C$, determine the recommended cutting speed for a tool life of 30 min.

(10 marks)

S8   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 metal removal rate during the cut.

(10 marks)

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