FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**August 2020**			
Programme	:	Diploma in Mechanical Engineering (DMEN)			
Course	:	**EGM2166: Workshop Technology and Workshop Practice**			
Date of Examination	:	12 December 2020 (Saturday)			
Time	:	8.00am – 10.15am	Reading Time	:	Nil
Duration	:	2 Hours 15 Minutes			

Special Instructions :

This paper consists of **FOUR (4)** questions. Answer all **FOUR (4)** questions. All questions carry equal marks.

Material permitted :

Non-Programmable Scientific Calculator

Materials provided :

Nil

Examiner(s)	:	**Dr Aaron Edward Teo**
Chief Moderator	:	Mohd Hafis Zakaria

*This paper consists of **5** printed pages, including the cover page*

DIPLOMA IN MECHANICAL ENGINEERING PROGRAMME (DMEN)
EGM2166: WORKSHOP TECHNOLOGY AND WORKSHOP PRACTICE
FINAL ALTERNATIVE ASSESSMENT: AUGUST 2020 SESSION

Instructions: This paper consists of FOUR **(4)** questions. Answer all **FOUR (4)** questions. All questions carry equal marks.

Question 1

a) During an experiment, it was found that a cube shaped casting require 155 sec to solidify. The cube was 50 mm on a side.
   i. Compute the value of the mold constant, C in Chvorinov's Rule. Give your answer in s/mm^2.
   ii. If the same alloy and mold type were used, predict the total solidification time for a cylindrical casting in which the diameter, d = 30 mm and length, h = 50 mm.

(15 marks)

b) Classify **FIVE (5)** types of welding joints and include neat sketch to supplement your answer.

(10 marks)

Question 2

a) Figure 1 shows the product of one of the cold working process in metal forming. Describe the process with the aid of a neat sketch.

Figure 1

(10 marks)

b) Figure 2 shows a metal forming process which uses a slower and continuous pressure to shape metal into a certain shape. State the name of the process called and list **TWO (2)** advantages and **TWO (2)** disadvantages of it.

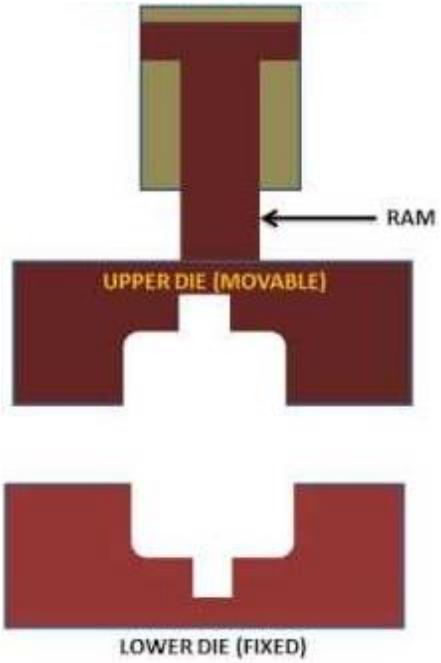

Figure 2

(10 marks)

c) Name the following tool in Figure 3 and briefly describe its use.

Figure 3

(5 marks)

Question 3

a) Describe the following tools that are used for bench work and fitting:
   i. Vices
   ii. Files
   iii. Scriber

(6 marks)

b) Figure 4 shows a typical lathe machine. Name and describe the use of the following parts:
   i. Part A
   ii. Part B
   iii. Part C

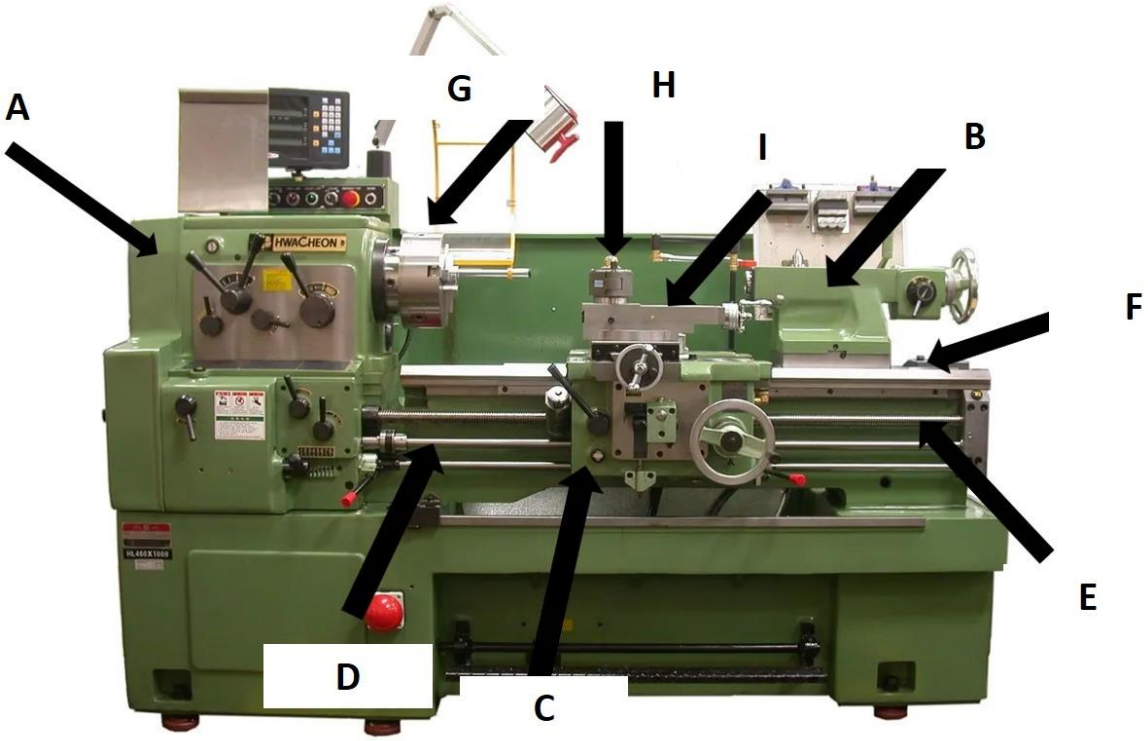

Figure 4

(9 marks)

c) Besides drilling, state **FIVE (5)** other operations that can be done on a drilling machine.

(10 marks)

Question 4

a) A 200 mm diameter face-milling cutter is used to cut material of length, L=500 mm long and width, b=200 mm wide. The cutter operates at a speed of Vc=30 m/min and table feed f=0.27 mm/tooth takes a depth of cut d=5 mm deep. There are 6 teeth on the cutter. Compute:

i. The spindle speed (3 Marks)

ii. The feed rate (3 Marks)

b) Figure 5 shows a bed-type milling machine. Explain briefly **THREE (3)** principal parts of the machine.

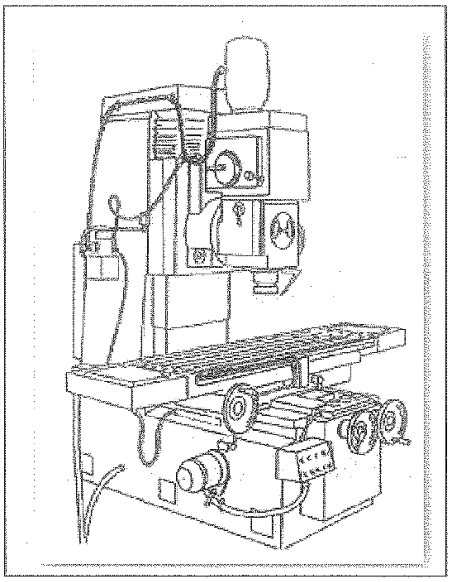

Figure 5

(9 marks)

c) List down **TWO (2)** areas where automation can be implemented.

(4 marks)

d) "*A method of supply chain management that decrease waste by receiving goods when they are needed*."

Name the method described above and state **TWO (2)** advantages of the method in a manufacturing system.

(6 marks)

~THE END~