INSTRUCTION :

This section consist of **FOUR (4)** questions. Answer **ALL** questions.

ARAHAN :

Bahagian ini mengandungi **EMPAT (4)** soalan. Jawab **SEMUA** soalan.

QUESTION 1

SOALAN 1

(a) Hand tools in mechanical workshop can be divided into several types such as cutting tools and testing tools.

i. Name **FOUR (4)** part of a hacksaw.

*Namakan **EMPAT (4)** bahagian gergaji tangan*

CLO1
C1

[4 marks]

[4 markah]

ii. List **TWO (2)** types of testing tools.

*Senaraikan **DUA (2)** jenis alatan pengujian.*

[2marks]

[2 markah]

CLO1
C2

(b) Explain **FOUR (4)** safety procedures in using hammer and disscuss **FIVE (5)** approaches of file care.

*Terangkan **EMPAT** prosedur keselamatan semasa menggunakan tukul dan bincangkan **LIMA (5)** pendekatan dalam penjagaan kikir.*

[13 marks]

[13 markah]

CLO 1
C3

(c) Calculate the cutting speed when drilling a hole with a drill bit with diameter of 10mm on a piece of mild steel. Given the recommended cutting speed is 25 meter per minute.

Kirakan kelajuan pemotongan mata gerudi untuk membuat lubang dengan menggunakan mata gerudi berdiamater 10mm pada bahan kerja keluli lembut. Diberi kelajuan pemotongan yang dicadangkan adalah 25 meter per minit.

[6 marks]

[6 markah]

QUESTION 2

SOALAN 2

(a) List **FIVE (5)** main parts of a lathe machine and name **FIVE (5)** types of operation, which can be performed using a lathe machine.

*Senaraikan **LIMA (5)** bahagian utama pada mesin larik and namakan **LIMA (5)** jenis operasi yang boleh dilakukan menggunakan mesin larik.*

CLO1
C1

[10 marks]

[10 markah]

(b) With the aid of a diagram, explain **THREE (3)** differences between up milling and down milling.

CLO1
C2

*Dengan bantuan gambarajah, terangkan **TIGA (3)** perbezaan antara maraut atas dan meraut bawah.*

[9 marks]

[9 markah]

(c) Calculate the feed rate in mm/min for six-tooth helical carbide milling cutter with a diameter of 75mm for machining a cast-iron work piece (CS 60). Use the value of chip pertooth, CPT 0.25.

CLO1 C3

Hitungkan kadar suapan dalam milimeter per minit bagi pemotong mata alat peraut heliks 6 gigi yang berdiameter 75mm untuk memotong bahan kerja besi tuang (CS60). Ambil nilai CPT =0.25

[6 marks]

[6 markah]

CLO2 C1

QUESTION 3

SOALAN 3

(a) List **FIVE (5)** types of gear.

*Senaraikan **LIMA(5)** jenis gear.*

[5 marks]

[5 markah]

CLO2 C2

(b) Explain these **TWO (2)** types of indexing usually used for making a spur gear which is in Direct indexing and Simple indexing

*Terangkan **DUA (2)** jenis pengindeksan ini yang biasa digunakan untuk membuat gear taji iaitu Pengindeksan terus dan Pengikdeksan mudah*

[8 marks]

[8 markah]

CLO2
C3

(c) Write a G code program to produce the object in Figure 3(c) below using Computer Numerical Control (CNC). Use absolute coordinate system .
Tuliskan satu aturcara G kod untuk menghasilkan objek dalam Rajah 3(c) di bawah menggunakan mesin Kawalan Berangka Berkomputer (CNC). Gunakan sistem koordinat berpusat.

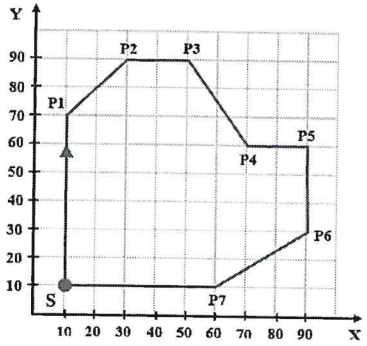

Figure 3 (c) / Rajah 3 (c)

[12 marks]
[12 markah]

CLO2
C1

QUESTION 4
SOALAN 4

(a) List **THREE (3)** basic components of an arc welding machine and give **THREE (3)** types of welding joint.
*Senaraikan **TIGA (3)** komponen asas bagi mesin kimpalan arka dan berikan **TIGA (3)** jenis sambungan kimpalan.*

[6 marks]
[6 markah]

CLO2
C2

(b) Explain **THREE (3)** advantages of manifold system in gas welding.
*Terangkan **TIGA (3)** kebaikan sistem pancarongga dalam kimpalan gas.*

[9 marks]
[9 markah]

CLO2
C3

(c) Tungsten Inert Gas (TIG Welding)also known as Gas Tungsten Arc Welding (GTAW)is an arc welding process that produces the weld with non -consumable tungsten electrode. Metal Inert Gas welding (MIG) is an arc welding process that uses a continuous solid wire electrode heated and fed into the weld pool from a welding gun.

i. Write **TWO (2)** advantages of TIG Welding.
*Tuliskan **DUA (2)** kelebihan kimpalan TIG*

[4 marks]
[*4 markah*]

ii Write the differences between defect and distortion in Metal Inert Gas (MIG) welding.
Tuliskan perbezaan di antara kecacatan dan herotan kimpalan logam berperisai gas (MIG).

[6 marks]
[*6 markah*]

SOALAN TAMAT