

INSTRUCTION:

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

ARAHAN :

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

QUESTION 1**SOALAN 1**CLO1
C1

- (a) Name **THREE (3)** marking tools used in a mechanical engineering workshop and list the functions of each marking tool.

Namakan TIGA (3) alatan menanda yang digunakan di dalam bengkel kejuruteraan mekanikal dan senaraikan fungsi setiap alatan menanda itu.

[6 marks]
[6 markah]

CLO1
C2

- (b)
i. Explain the function of a micrometer

Terangkan fungsi micrometer

[3 marks]
[3 markah]

- ii. Explain **TWO (2)** advantages and disadvantages of using Vernier caliper

Terangkan DUA (2) kelebihan dan kelemahan menggunakan angkup Vernier

[4 marks]
[4 markah]

- iii. Based on Vernier caliper and micrometer in Figures 1b(iii), detail the correct reading.

Berdasarkan angkup Vernier dan micrometer pada Rajah 1b(iii), perincikan bacaan yang betul.

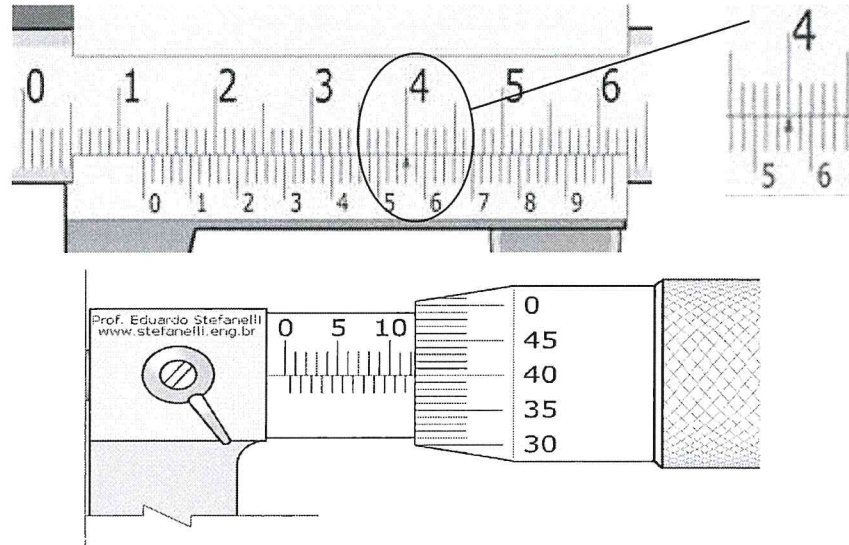


Figure 1b(iii) / *Rajah 1 b(iii)*

[6 marks]
[6 markah]

CLO1
C3

- (c) Draw a twist drill diagram and write **FOUR (4)** of the main parts.

Lukis satu gambarajah gerudi piuh dan tuliskan EMPAT (4) bahagian utama.

[6 marks]
[6 markah]

QUESTION 2**SOALAN 2**CLO1
C1

- (a) Lathe machine is a machine tool that rotates the workpiece on its axis to perform the operation.

Mesin larik adalah alatan mesin yang memutarakan bahan kerja pada paksinya untuk melakukan operasinya.

- i. List **FIVE (5)** types of production lathe machine.

Senaraikan LIMA (5) jenis mesin larik pengeluaran.

[5 marks]

[5 markah]

- ii. State **FIVE (5)** types of operation that can be performed on lathe machine.

Namakan LIMA (5) jenis operasi yang boleh dilakukan oleh mesin larik.

[5 marks]

[5 markah]

CLO1
C2

- (b) Explain **SIX (6)** safety procedures while using a milling machine.

Terangkan ENAM (6) prosedur keselamatan semasa menggunakan mesin peraut.

[9 marks]

[9 markah]

CLO1
C3

- (c) Calculate the feed rate in mm/min for a 12-tooth helical carbide, milling cutter with diameter of 50 mm for machining a cast-iron work piece (CS 33). Use the value of chip per tooth CPT of 0.06.

Hitungkan kadar suapan dalam millimeter per minit bagi pemotongan mata alat peraut heliks 12 gigi yang berdiameter 50 mm untuk memotong bahan kerja besi tuang (CS 33). Ambil nilai CPT = 0.06.

[6 marks]

[6 markah]

QUESTION 3**SOALAN 3**CLO2
C1

- (a) State **FIVE (5)** types of gear
Nyatakan LIMA (5) jenis gear.

[5 marks]
[5 markah]CLO2
C2

- (b) A spur gear has PD of 40 mm and 10 teeth. Find the value:
Sebuah gear mempunyai diameter pitch 40mm dan 10 gigi. Carikan nilai:
- i. Module
Modul

 - ii. Addendum
Addendum

 - iii. Dedendum
Dedendum

 - iv. Circular pitch
Circular pitch

[8 marks]
[8 markah]

CLO2
C3

- (c) Based on the Figure 2 (c), construct a CNC program using
Berdasarkan Rajah 2(c), bina program CNC menggunakan
- Absolute coordinate system
Sistem koordinat mutlak
 - Incremental coordinate system
Sistem koordinat tokokan

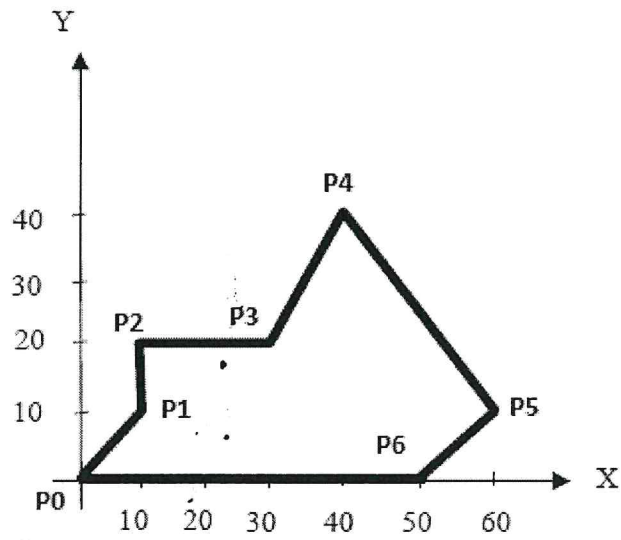
[12 marks]
[12 markah]

Figure 2(c)/Rajah 2(c)

QUESTION 4**SOALAN 4**

- (a) State **SIX (6)** types of welding joint.

CLO2
C1

Nyatakan ENAM (6) jenis sambungan kimpalan.

[6 marks]
[6 markah]

- (b)

- i. Explain briefly the purpose of the inert gas as a shielding gas in Metal Inert Gas (MIG) welding.

CLO2
C2

Terangkan secara ringkas kegunaan 'inert gas' sebagai gas pelindung untuk kimpalan Metal Inert Gas.

[3 marks]
[3 markah]

- ii. Explain **THREE (3)** effects of shielding gas in welding.

Terangkan TIGA (3) kesan gas pelindung untuk kimpalan gas

[6 marks]
[6 markah]

- (c) Write **FIVE (5)** common defects and causes of welding.

CLO2
C3

Tuliskan LIMA (5) hubungkait di antara kecacatan dan penyebabnya dalam kimpalan

[10 marks]
[10 markah]

SOALAN TAMAT