

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI**

JABATAN KEJURUTERAAN MEKANIKAL

PEPERIKSAAN AKHIR

SESI I : 2022 / 2023

DJJ10033: WORKSHOP TECHNOLOGY

TARIKH : 28 DISEMBER 2022

MASA : 8.30 PAGI – 10.30 PAGI (2 JAM)

Kertas ini mengandungi **TUJUH (7)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTIONS:

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

ARAHAN:

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

QUESTION 1**SOALAN 1**

CLO1
C1

- (a) Name **SIX (6)** hand tools which are used in mechanical engineering workshop.

*Namakan **ENAM (6)** alatan tangan yang digunakan di dalam bengkel kejuruteraan mekanikal.*

[6 marks]

[6 markah]

CLO1
C2

- (b) Micrometer and vernier caliper are two types of measuring tools commonly used in engineering workshops.

Mikrometer dan angkup vernier adalah dua jenis alat pengukuran yang biasa digunakan didalam bengkel kejuruteraan.

- (i) Explain procedure in using a micrometers.

Terangkan prosedur menggunakan mikrometer.

[4 marks]

[4 markah]

- (ii) Fill in the correct reading in **Table 1(b)** based on given vernier caliper and micrometer below.

*Isikan bacaan yang betul ke dalam **Jadual 1(b)** berdasarkan angkup vernier dan mikrometer pada **Rajah 1(b)** di bawah.*

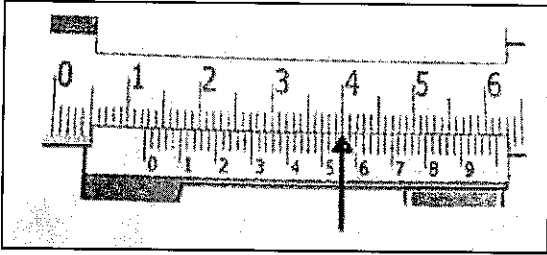
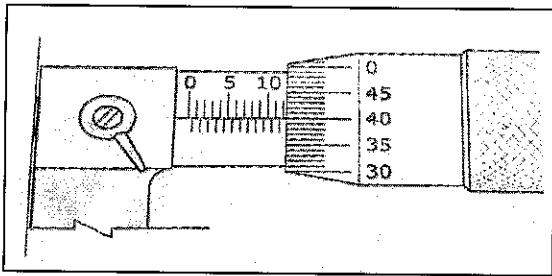
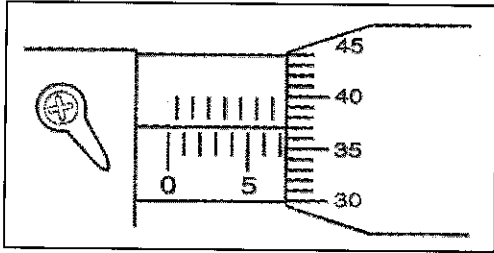
Measurement tool	Value
 Vernier Caliper 1	Main scale : _____ Vernier scale : _____ Total : _____
 Micrometer 1	Sleeve scale : _____ Thimble scale : _____ Total : _____
 Micrometer 2	Sleeve scale : _____ Thimble scale : _____ Total : _____

Table 1(b) / Jadual 1(b)

[9 marks]

[9 markah]

CLO1
C3

- (c) Sketch a twist drill bit.
Lakarkan sebatang mata gerudi piuh.

[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 operations.

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

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

Senaraikan LIMA (5) jenis mesin larik.

[5 marks]

[5 markah]

- (ii) List **FIVE (5)** operations that can be performed on a lathe machine.

Senaraikan LIMA (5) operasi yang boleh dilakukan pada mesin larik.

[5 marks]

[5 markah]

CLO1
C2

- (b) (i) Match the milling machine process based on **Figure 2(b)**.

Padankan proses mesin kisar berdasarkan Rajah 2(b).

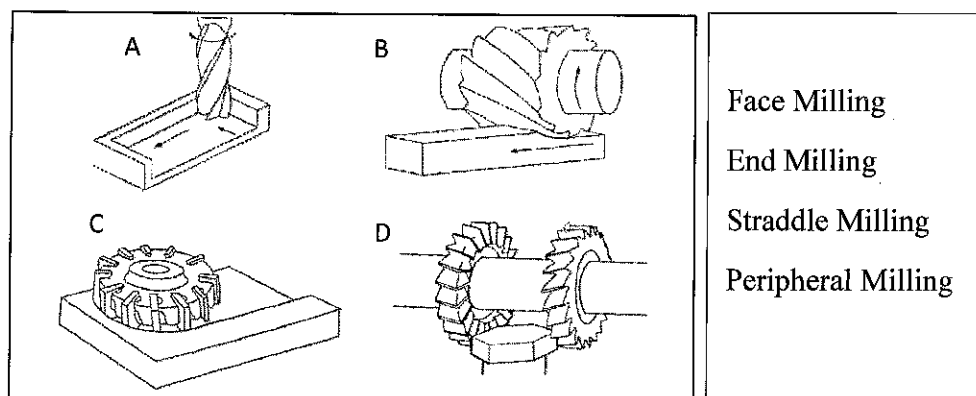


Figure 2(b) / Rajah 2(b)

[4 marks]

[4 markah]

- (ii) Explain **FIVE (5)** safety procedures during the milling machine operation.
Terangkan LIMA (5) langkah-langkah keselamatan semasa operasi mesin peraut .

[5 marks]

[5 markah]

CLO1
C3

- (c) Calculate the feed rate in millimeter/minute for a twelve tooth (12 tooth) helical carbide, a 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.

Kirakan kadar suapan dalam millimeter/minit bagi pemotongan mata alat peraut karbida heliks dua belas gigi (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 gears.
Nyatakan LIMA (5) jenis gear.

[5 marks]

[5 markah]

CLO2
C2

- (b) Explain **FOUR (4)** advantages of CNC machining over conventional machining.

Terangkan EMPAT (4) kelebihan pemesinan CNC berbanding pemesinan konvensional.

[8 marks]

[8 markah]

CLO2
C3

- (c) Based on **Figure 3c**, write a CNC coordinate using the following system;
Berdasarkan Rajah 3c, tulis koordinat CNC menggunakan sistem berikut;

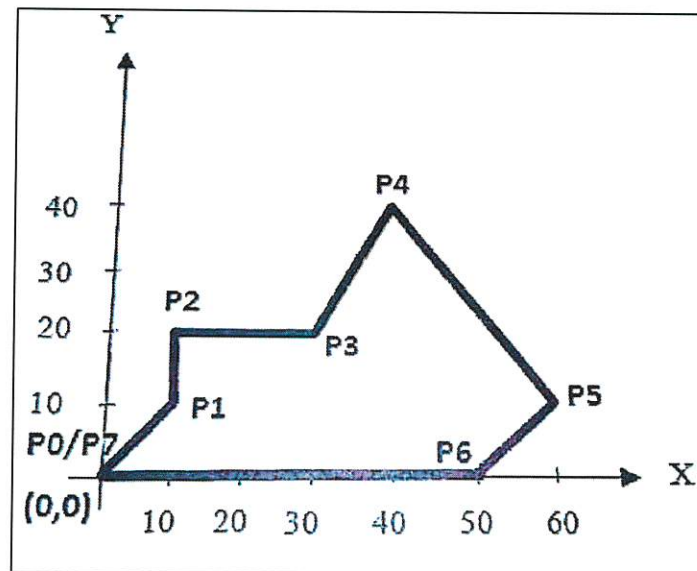


Figure 3c / Rajah 3c

- (i) Absolute coordinate system.
Sistem koordinat mutlak
- (ii) Incremental coordinate system.
Sistem koordinat tokokan.

[6 marks]

[6 markah]

[6 marks]

[6 markah]

QUESTION 4**SOALAN 4**CLO2
C1

- (a) (i) Give the meaning of welding.

Berikan maksud kimpalan.

[1 mark]

[1 markah]

- (ii) State **FIVE (5)** types of basic welding joints.

*Nyatakan **LIMA (5)** jenis sambungan asas kimpalan.*

[5 marks]

[5 markah]

CLO2
C2

- (b) Metal Inert Gas (MIG) Welding is also known as Gas Metal Arc Welding (GMAW).

Kimpalan Logam Gas Lengai (MIG) juga dikenali sebagai Kimpalan Arka Logam Gas (GMAW).

- (i) Explain the advantage of GMAW over SMAW.

Terangkan kelebihan GMAW berbanding SMAW.

[3 marks]

[3 markah]

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

*Terangkan **TIGA (3)** kesan gas pelindung dalam kimpalan.*

[6 marks]

[6 markah]

CLO2
C3

- (c) Sketch **FIVE (5)** common defects in welding.

*Lakarkan **LIMA (5)** kecacatan umum dalam kimpalan.*

[10 marks]

[10 markah]

SOALAN TAMAT