

SULIT



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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI II : 2021/2022

DCQ50222 : PRINCIPLE OF STRUCTURE

TARIKH : 6 JULAI 2022

MASA : 11.30 – 1.30 PETANG

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

Bahagian A: Struktur (3 soalan)

Bahagian B: Esei (1 soalan)

Dokumen sokongan yang disertakan : **TIADA**

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 75 MARKS**BAHAGIAN A : 75 MARKAH****INSTRUCTION:**

This section consists of **THREE (3)** essay questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi **TIGA (3)** soalan esei. Jawab **SEMUA** soalan.

QUESTION 1**SOALAN 1**

CLO1
C2

- (a) Explain the dead load and live load.
Jelaskan beban mati dan beban hidup.

[6 marks]

[6 markah]

CLO1
C2

- (b) Identify the magnitudes of horizontal force and vertical force as shown in **Diagram A1 (b)(i)** and **Diagram A1 (b)(ii)**.

*Kenalpasti jumlah magnitud daya ufuk dan daya pugak seperti yang ditunjukkan dalam **Rajah A1 (b)(i)** dan **Rajah A1 (b)(ii)**.*

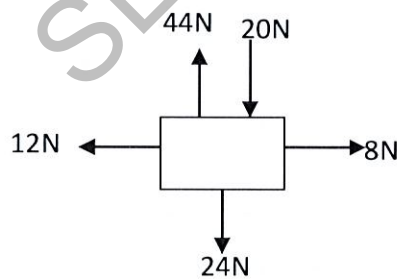


Diagram A1 (b)(i)
Rajah A1 (b)(i)

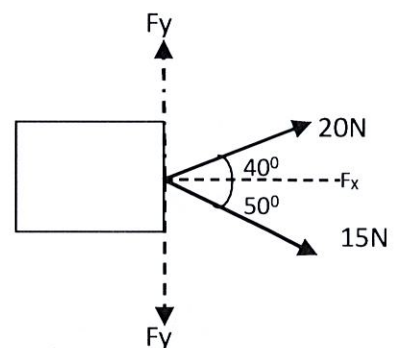


Diagram A1 (b)(ii)
Rajah A1 (b)(ii)

[8 marks]

[8 markah]

CLO1
C2

- (c) Given a multiple force that act at point O at **Diagram A1(c)**. Show the resultant force, and its direction.

*Diberi pelbagai daya yang bertindak dari titik asalan O seperti **Rajah A1(c)**. Tunjukkan daya paduan yang terhasil dan arah sistem daya itu.*

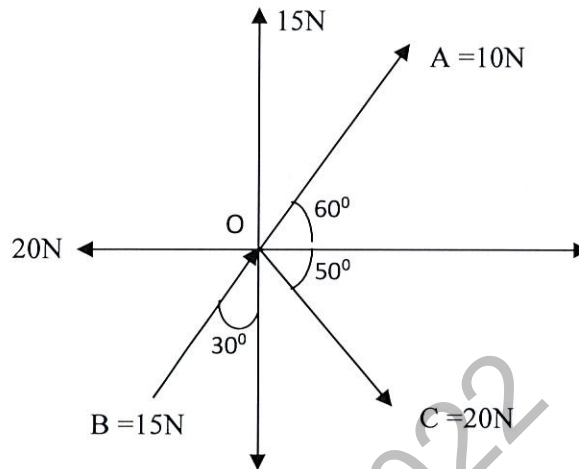


Diagram A1(c)/Rajah A1(c)

[11 marks]

[11 markah]

QUESTION 2

SOALAN 2

CLO1
C2

- (a) Describe the types of point load and uniform distributed load.

Huraikan jenis beban tumpu dan beban teragih seragam.

[6 marks]

[6 markah]

CLO1
C2

- (b) By using the appropriate diagram, explain **THREE (3)** types of statically determinate beam such as simply supported beam, cantilever beam and overhanging beam.

*Dengan menggunakan rajah yang sesuai, jelaskan **TIGA (3)** jenis rasuk seperti rasuk tumpang mudah, rasuk julur dan rasuk tergantung.*

[9 marks]

[9 markah]

CLO1
C2

- (c) **Diagram A2(c)** shows a beam loaded with forces. Identify the reaction at the supports of beam and sketch a shear force diagram and a bending moment diagram.

Diagram A2(c) menunjukkan rasuk di kenakan beban ke atasnya. Kenalpasti daya tindakbalas pada penyokong rasuk di atas dan lakarkan gambarajah daya ricih dan gambarajah momen lentur.

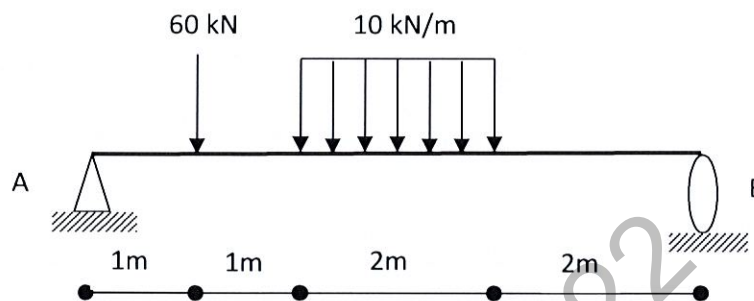


Diagram A2(c) /Rajah A2(c)

[10 marks]

[10 markah]

QUESTION 3

SOALAN 3

CLO1
C2

- (a) Explain the terms of Hooke's Law, Stress, Strain and Modulus of Elasticity.
Terangkan istilah-istilah bagi Hukum Hooke, Tegangan, Terikan dan Modulus Keanjalan.

[6 marks]

[6 markah]

CLO1
C2

- (b) A rod 2.0m long and sectional area is 1200mm^2 has elongation 5.0 mm when force of 200kN applied. Identify the stress in the rod, strain and modulus of elasticity.

Satu rod 2.0m panjang dengan luas keratan rentasnya 1200mm^2 mengalami pemanjangan 5.0mm apabila dikenakan daya tegangan 200kN. Kenalpasti tegangan tegangan di dalam rod, keterikan dan modulus keanjalan.

[9 marks]

[9 markah]

CLO1
C2

- (c) A 40 mm diameter steel rod with a length of L m is subjected to a compression load of 45 kN and contracted by 0.07 mm. Identify the compressive stress, compressive strain, and the length of steel rod if the value of steel rod Young's Modulus, E is 205 kN/mm²

Sebatang rod keluli berdiameter 40 mm dan L m panjang dikenakan beban mampatan 45 kN dan mengalami pemendekkan sebanyak 0.07 mm. Kenalpasti tegasan mampatan, terikan mampatan dan panjang rod keluli, jika Modulus Keanjalan Young's untuk rod keluli, E ialah 205 kN/mm²

[10 marks]

[10 markah]

SESI II: 2021/2022

SECTION B : 25 MARKS**BAHAGIAN B : 25 MARKAH****INSTRUCTION:**

This section consists of **ONE (1)** essay question. Answer the question.

ARAHAN:

Bahagian ini mengandungi SATU (1) soalan esei. Jawab soalan tersebut.

QUESTION 1**SOALAN 1**

CLO2
C3

- (a) **Diagram B1(a)**, shows a cantilever beam which carries point load and uniformly distributed load beams. With the aid of sketch free body diagram, calculate the reaction at point A.

Rajah B1(a), menunjukkan satu rasuk julur yang menanggung beban tumpu dan beban teragih seragam. Dengan bantuan gambarajah jasad bebas, kirakan tindakbalas pada titik A.

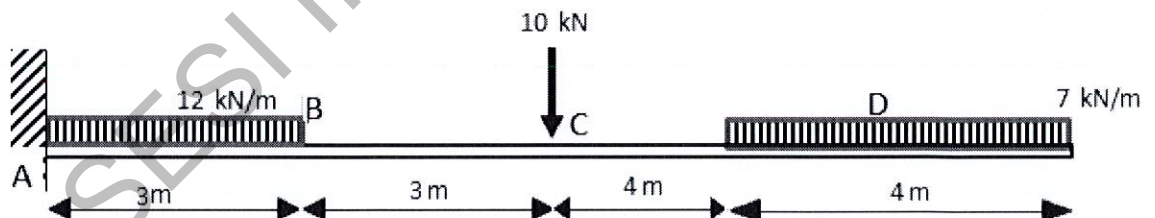


Diagram B1(a) / Rajah B1(a)

[8 marks]

[8 markah]

CLO2
C3

- (b) Based on **Diagram B1(a)** in Question B4(a) above, sketch the shear force and bending moment for that beam.

*Berdasarkan **Rajah B1(a)** dalam Soalan B4(a) di atas, lakarkan gambarajah daya ricih dan momen lentur bagi rasuk tersebut.*

[17 marks]
[17 markah]

SOALAN TAMAT