17

SULIT

POLITEKNIK
Jabatan Pengajian Politeknik

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENGAJIAN TINGGI

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI JUN 2013

C5303: TEORI STRUKTUR 2

TARIKH : 22 OKTOBER 2013
TEMPOH : 2 JAM (2.30 PM – 4.30 PM)

Kertas ini mengandungi **TUJUH (7)** halaman bercetak.
Esei (6 Soalan: Jawab 4)
Dokumen sokongan yang disertakan

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

SULIT

INSTRUCTION:
This section consists of **SIX (6)** essay questions. Answer **FOUR (4)** questions only.

ARAHAN:
*Bahagian ini mengandungi **ENAM (6)** soalan esei. Jawab **EMPAT (4)** soalan sahaja.*

QUESTION 1
SOALAN 1

The truss below is pin support at A and roller at D. Determine

i) the reactions at A and D. (5 marks)

ii) the internal forces in all members using the method of joints. State the condition of the members either in tension or compression. (20 marks)

Kerangka di bawah disokong secara pin di A dan rola di D. Tentukan

i) Tindakbalas di A dan D. (5markah)
ii) Daya dalaman dalam semua ahli dengan menggunakan kaedah sambungan. Nyatakan samada ahli berada dalam tegangan atau mampatan. (20markah)

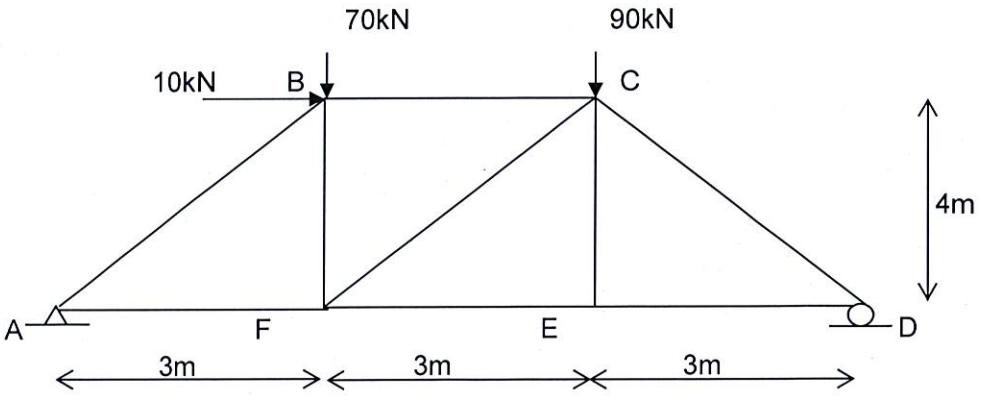

Figure 1/*Rajah 1*

QUESTION 2

SOALAN 2

A simple truss as shown below is loaded with point load of 80kN and 15kN at B. By using unit load method determine the vertical displacement of joint D. Given the cross sectional area of all members are 600 mm^2 and Young's Modulus, E is 210 kN/mm^2.

(25 marks)

Satu kerangka mudah seperti di bawah dikenakan beban tumpu 80kN dan 15kN di B. Tentukan anjakan pugak titik D dengan menggunakan kaedah unit beban. Diberi luas keratan rentas semua ahli adalah 600 mm^2 dan Modulus Young, E adalah 210 kN/mm^2.

(25markah)

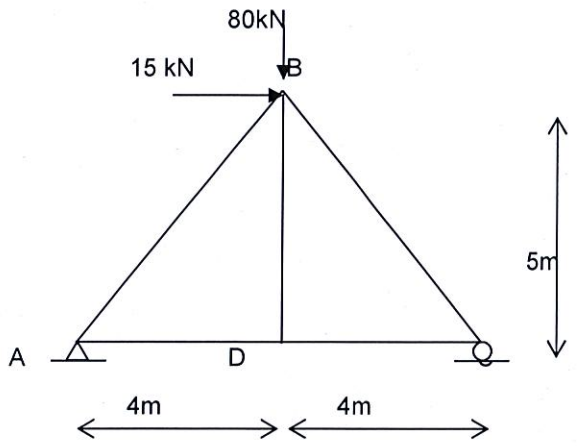

Figure 2/*Rajah 2*

QUESTION 3

SOALAN 3

An indeterminate framework is loaded with point loads of 50kN and 15kN as shown below. By using the unit load method, determine the forces in all members. Assume member AC as surplus.

(25 marks)

Satu kerangka tidak boleh tentu dibebankan dengan beban tumpu 40kN seperti yang ditunjukkan. Dengan menggunakan kaedah unit beban , tentukan daya dalam semua ahli. Anggap ahli AC sebagai lelebih.

(25markah)

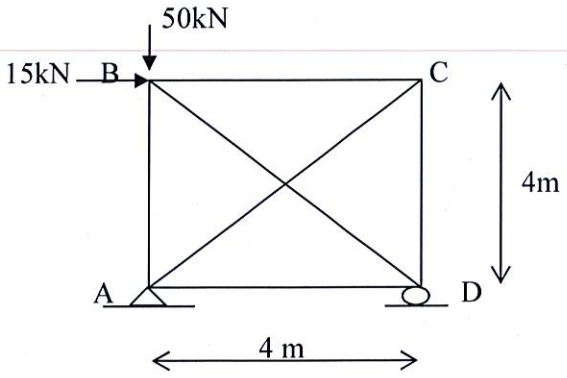

Figure 3/*Rajah 3*

QUESTION 4
SOALAN 4

Draw the influence line of reaction at A, shear force at C and bending moment at C for the beam below. If a series of loads moving across from A to B, determine

i) the maximum value of reaction at A (5 marks)
ii) The maximum shear force at C (5.5 marks)
iii) The bending moment at C when each load positioned at the point C (i.e. for 4 cases of load situation) (14.5 marks)

Lukis garis imbas tindakbalas di A, daya rich di C dan momen lentur di C bagi rasuk di bawah. Jika beban bersiri bergerak dari A ke B, tentukan :

i) tindakbalas maksima di A. (5markah)
ii) daya ricih maksima di C (5.5markah)
iii) momen lentur di C apabila setiap beban berada di C (i.e untuk 4 kes beban (14.5markah)

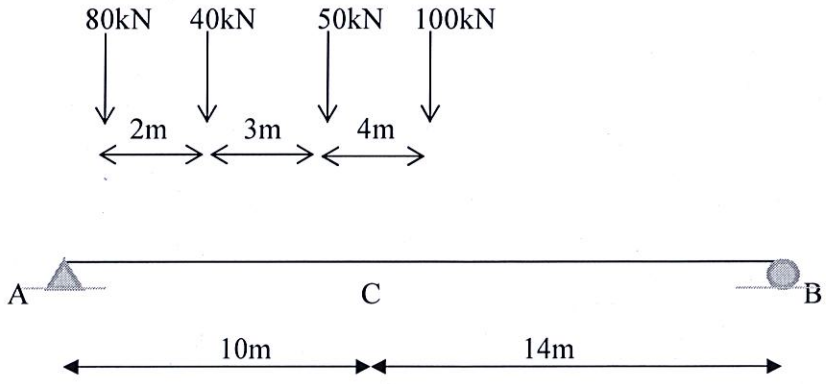

Figure 4/*Rajah 4*

QUESTION 5

SOALAN 5

A series of loading system is crossing a beam bridge from A to B with load 20kN in front as shown in figure 4. Find the absolute maximum moment for the beam.

(25 marks)

Satu siri beban bergerak melintasi rasuk dari A ke B dengan beban 15Kn berada di depan seperti yang ditunjukkan dalam gambarajah 5 . Tentukan momen maksima mutlak bagi rasuk berkenaan.

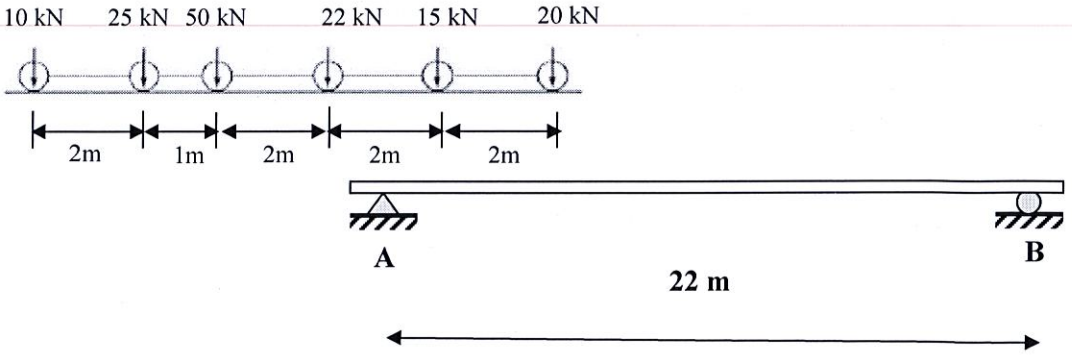

Figure 5/*Rajah 5*

QUESTION 6

SOALAN 6

Draw the influence line for internal forces in member FE and GF of the truss as shown below. Then calculate the maksimum internal force in both members if a point load of 80kN and a distributed load of 15kN/m longer than the span moving across the lower chord of the truss. (25 marks)

Lukis garis imbas daya dalaman bagi ahli AB dan BC pada kerangka di bawah. Seterusnya kirakan daya dalaman maksima bagi kedua-dua ahli jika beban tumpu 80 kN dan beban seragam 15kN/m bergerak melintasi cod bawah kerangka. (25markah)

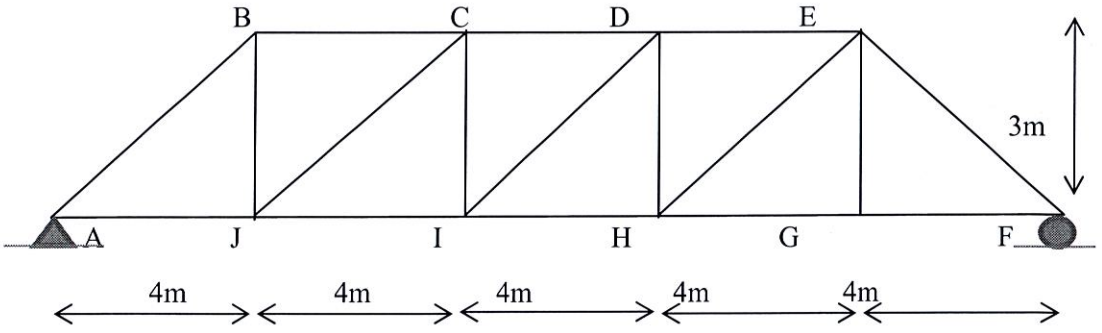

Figure 6/*Rajah 6*