

SULIT



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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI I : 2022/2023

DCQ40162 ESTIMATING 2

TARIKH : 19 DISEMBER 2022

MASA : 2.30 PM – 4.30 PM (2 JAM)

Kertas ini mengandungi **EMPAT BELAS (14)** halaman bercetak.

Bahagian A: Struktur (2 soalan)

Bahagian B: Esei (4 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 50 MARKS
BAHAGIAN A : 50 MARKAH

INSTRUCTION:

This section consists of **TWO (2)** structured questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi DUA (2) soalan berstruktur. Jawab SEMUA soalan.

QUESTION 1

SOALAN 1

CLO2
C2

- (a) Refer on Table A1a, describe how to get the quantity of tile.

Merujuk kepada Jadual A1a, huraikan bagaimana untuk mendapat kuantiti genting.

Table A1a: Quantity interlock concrete roof tile

Jadual A1a: Kuantiti genting bumbung konkrit interlock

Size tile (mm)	Head Lap (mm)	Side Lap (mm)	Quantity per m ² (no)
380 x 230	75	35	16.81
420 x 330	75	35	9.83

[5 marks]

[5 markah]

CLO2
C3

- (b) Based on the cost data given, built-up rates for ground cover (cow grass) spot turfing in landscape work. (Unit – m²)

Berdasarkan data kos yang diberi, bangukan kadar harga untuk penutup tanah (rumput lembut) bagi kerja lanskap. (Unit – m²)

Cost Data/ Data Kos:

Supply cow grass and 50mm thick black soil <i>Membekal rumput lembu dan 50mm tebal tanah hitam</i>	RM15.60/m ²
Wastage <i>Pembaziran</i>	5%
Labour cost for excavate soil (by hand) <i>Kos buruh untuk menggali tanah (dengan tangan)</i>	RM5.50/m ²
Labour cost for spreading and leveling 50mm thick approved black soil <i>Kos buruh untuk menghampar dan meratakan 50mm tebal tanah hitam yang diluluskan</i>	RM8.90/m ²
Labour cost for planting grass at a distance not exceeding 300mm centers <i>Kos buruh untuk menanam rumput pada jarak tidak melebihi 300mm tengah ke tengah</i>	RM2.50/m ²
Maintenance cost <i>Kos penyelenggaraan</i>	RM2.50/m ²
Profit and overhead <i>Keuntungan dan pengurusan</i>	20%

[8 marks]

[8 markah]

CLO2
C3

- (c) Based on the cost data given, built-up rates for 225mm diameter half precast concrete drain 750mm length; bedded and jointed in cement mortar (1:3). (Unit – m)

Berdasarkan data kos yang diberi, bangunkan kadar harga untuk 225mm diameter longkang konkrit tuang dahulu separa bulat 750mm panjang; dihampar dan dipasang dengan mortar simen (1:3). (Unit – m)

Cost Data/ Data Kos:

Price rate for half precast concrete drain 750mm length <i>Kadar harga longkang konkrit separa bulat 750mm panjang</i>	RM80.00/no
Wastage <i>Pembaziran</i>	5%
Price rate for mortar <i>Kadar harga mortar</i>	RM233.60/m ³
Mortar usage per meter drain <i>Penggunaan mortar per meter longkang</i>	0.15m ³ /m
Skilled worker wage <i>Upah pekerja mahir</i>	RM90.00/day
Unskilled worker wage <i>Upah pekerja tidak mahir</i>	RM60.00/day
Price rate for mixing 0.15m ³ mortar <i>Kadar harga untuk membancuh 0.15m³ mortar</i>	RM0.61
Skilled worker constant for bedded and jointed drain <i>Angkatap pekerja mahir untuk hampar dan pasang longkang</i>	0.45 hour/m
Unskilled worker constant for bedded and jointed drain <i>Angkatap pekerja tidak mahir untuk hampar dan pasang longkang</i>	0.45 hour/m
Profit and overhead <i>Keuntungan dan pengurusan</i>	30%

[12 marks]

[12 markah]

QUESTION 2**SOALAN 2**CLO2
C2

- (a) Preliminary estimate involved in the early stages of project design. Describe **TWO (2)** primary functions of the preliminary estimate.

Anggaran awalan terlibat di peringkat awal rekabentuk projek. Huraikan DUA (2) fungsi utama anggaran awalan.

[5 marks]

[5 markah]

CLO2
C3

- (b) Based on Table A1b, find cost per bed for each of the previous hospital project and estimate the total cost to build a new hospital that can accommodate 2500 beds.

Berdasarkan Jadual A1b, kirakan kos per katil untuk setiap projek hospital terdahulu dan anggarkan jumlah kos untuk membina hospital baru yang dapat menempatkan 2500 katil.

Table A1b: Cost data of previous hospitals project

Jadual A1b: Data kos projek hospital terdahulu

Hospital	Total Cost (RM)	Beds (nos)
A	4.5 million	1000
B	12 million	2000
C	7.5 million	1500
D	20.65 million	3000

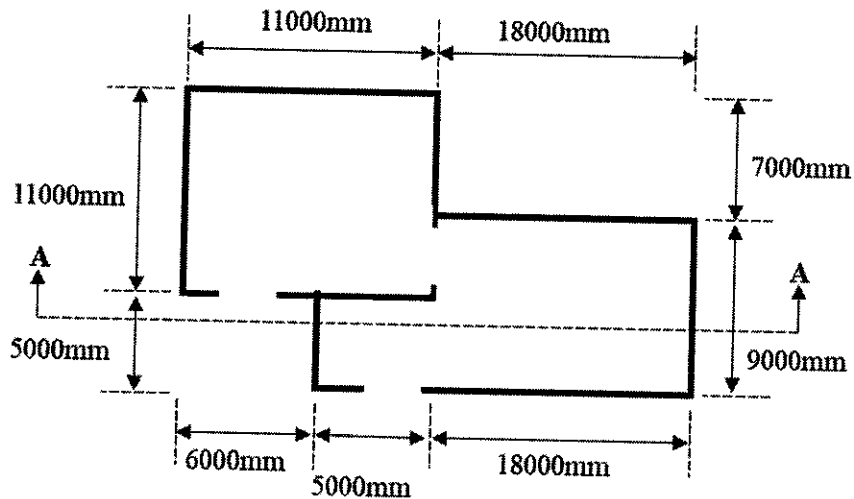
[8 marks]

[8 markah]

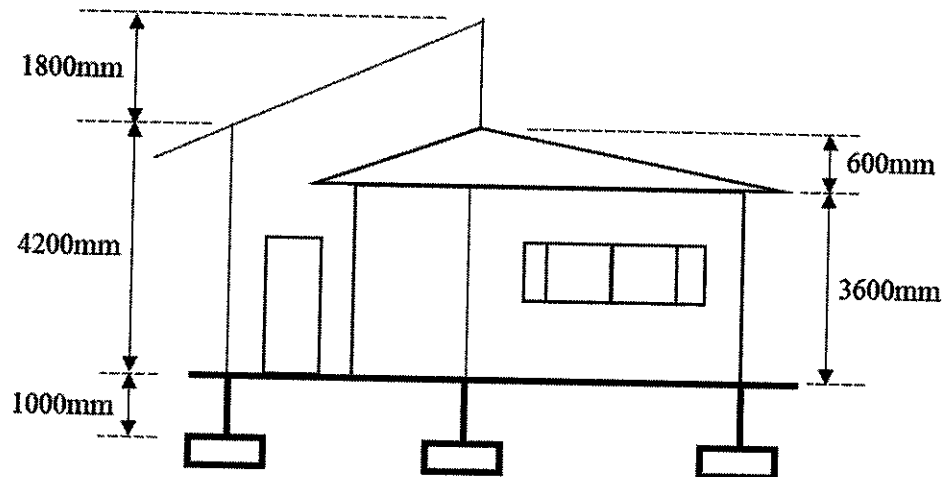
CLO2
C3

- (c) Young Millionaire Club plans to build a bungalow in Sungai Buloh, Selangor. Based on Diagram A1c, prepare preliminary estimate for the proposed new bungalow by using a cubic method.

Kelab Jutawan Muda bercadang membina sebuah banglo di Sungai Buloh, Selangor. Berdasarkan Rajah A1c, sediakan anggaran awalan bagi banglo baru yang dicadangkan dengan menggunakan kaedah isipadu.



FLOOR PLAN



SECTION A - A

Diagram A1c: Proposed New Bungalow

Rajah A1c: Cadangan Banglo Baru

[12 marks]

[12 markah]

SECTION B : 50 MARKS
BAHAGIAN B : 50 MARKAH

INSTRUCTION:

This section consists of **FOUR (4)** essay questions. Answer **TWO (2)** questions only.

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan esei. Jawab DUA (2) soalan sahaja.

QUESTION 1

SOALAN 1

CLO2
C3

- (a) Based on the cost data given, built-up rates for 25mm diameter Class B galvanized mild steel pipe screwed socket joints in the running length fixed with metal clips, plugged and screwed to brickwork at 1.00 meter centres. (Unit – m)

Berdasarkan data kos yang diberi, bangunkan kadar harga untuk 25mm diameter Class B paip keluli lembut bergalvani soket penyambung diskrukan pada panjang paip dengan klip logam diplug dan diskrukan pada kerja bata setiap 1.00meter tengah ke tengah. (Unit – m)

Cost Data/ Data Kos:

25mm diameter galvanised mild steel pipe <i>25mm diameter paip keluli lembut bergalvani</i>	RM45.00/6m
Socket joint <i>Soket penyambung</i>	RM3.00/no
Price rate PTFE tape per meter of pipe <i>Kadar harga pita PTFE per meter paip</i>	RM0.50/m
Price rate clips and screws per meter of pipe <i>Kadar harga klip dan skru per meter paip</i>	RM0.50/m
Wastage <i>Pembaziran</i>	5%
Skilled worker constant <i>Angkatap pekerja mahir</i>	0.22 hour/m
Unskilled worker constant	0.22 hour/m

<i>Angkatap pekerja tidak mahir</i>	
Skilled worker wage <i>Upah pekerja mahir</i>	RM85.00/day
Unskilled worker wage <i>Upah pekerja tidak mahir</i>	RM60.00/day
Profit and overhead <i>Keuntungan dan pengurusan</i>	20%

[15 marks]

[15 markah]

CLO2
C4

- (b) Analyze the price rate per square meter (RM/m²) and percentage (%) of lapping for 2200mm x 704mm x 0.35mm thick steel roofing sheet decking with 100mm head lap and 65mm side lap. Given the price rate for steel roofing sheet decking is RM66.50 per piece (RM66.50/nos).

Analisa kadar harga per meter persegi (RM/m²) dan peratusan (%) pertindihan untuk 2200mm x 704mm x 0.35mm tebal kepingan dek bumbung keluli dengan 100mm tindihan hujung dan 65mm tindihan sisi. Diberikan kadar harga untuk kepingan dek bumbung keluli ialah RM66.50 per keping. (RM66.50/no).

[10 marks]

[10 markah]

QUESTION 2**SOALAN 2**CLO2
C3

- (a) Based on the cost data given, built-up rates for the total area of 400mm width x 12.00m long x 48kg/m FSP II steel sheet pile. (Unit – m²)

Berdasarkan data kos yang diberi, bangunkan kadar harga untuk jumlah luas 400mm lebar x 12.00m panjang x 48kg/m FSP II cerucuk kepingan keluli. (Unit – m²)

Cost Data/ Data Kos:

FSP II U steel sheet pile <i>FSP II U cerucuk kepingan keluli</i>	RM2419.00/no
Lorry Load <i>Muatan lori</i>	15 no piles /lorry
Unload time (used 2 workers) <i>Masa memunggah (menggunakan 2 pekerja)</i>	1 hour/lorry
Crane rental to unload <i>Sewa kren untuk memunggah</i>	RM800.00/day
Worker wage <i>Upah pekerja</i>	RM75.00/day
Wastage <i>Pembaziran</i>	5%
Number of pile usages <i>Bilangan penggunaan cerucuk</i>	2 times/pile
Total area steel sheet pile <i>Jumlah luas kepingan cerucuk keluli</i>	4.80m ² /no
Profit and overhead <i>Keuntungan dan pengurusan</i>	30%

[15 marks]

[15 markah]

CLO2
C4

- (b) Based on the cost data given, compare the material cost for 300mm x 50mm x 10mm thick timber floor merbau with the 2700mm x 138mm x 38mm thick tongued and grooved WPC decking board flooring. (Unit – m²)

Berdasarkan data kos yang diberi, bandingkan kos bahan untuk 300mm x 50mm x 10mm tebal lantai kayu merbau dengan 2700mm x 138mm x 38mm tebal WPC dek papan lantai lidah dan alur. (Unit – m²).

Cost Data/ Data Kos:

WPC decking board flooring <i>Kadar harga papan Lantai 1:</i>	RM75.00/no
Length tongued of decking board flooring <i>Panjang lidah papan dek lantai</i>	12mm
Timber floor merbau <i>Kayu lantai merbau</i>	RM2.00/no
Wastage <i>Pembaziran</i>	10%

[10 marks]

[10 markah]

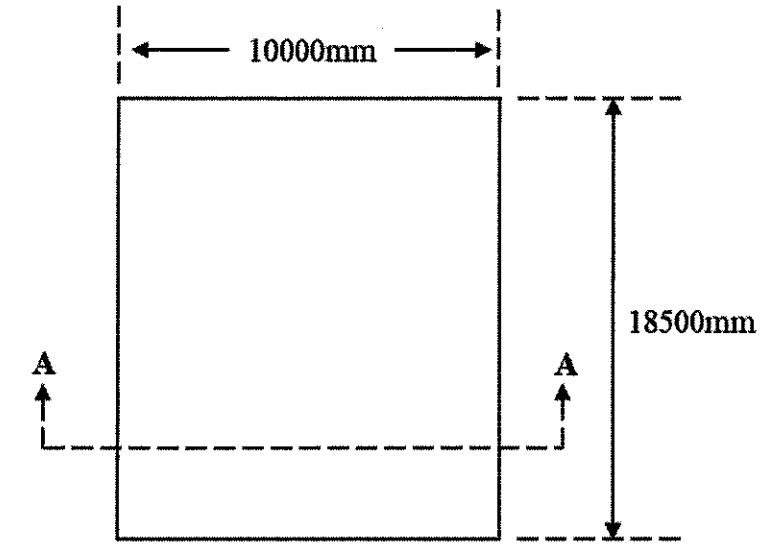
QUESTION 3

SOALAN 3

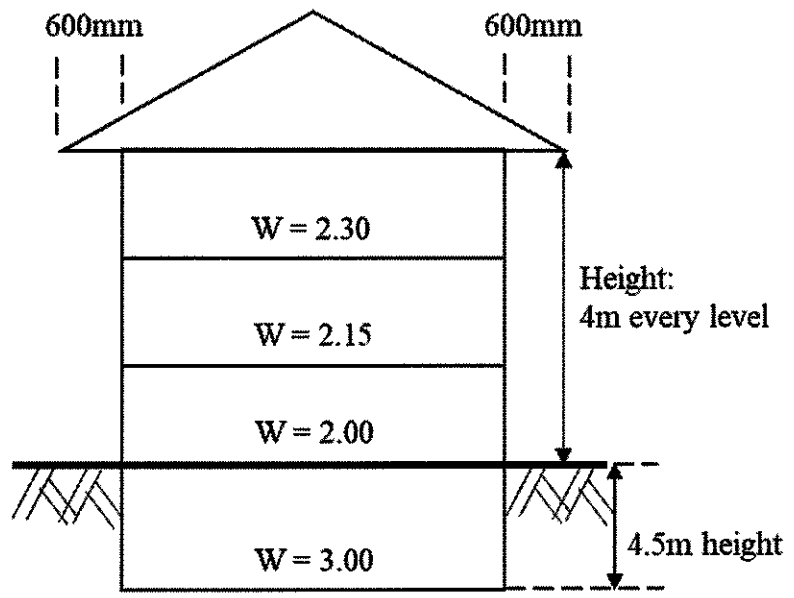
CLO2
C3

- (a) Based on Diagram B3a, prepare preliminary estimate for the building by using storey enclosure method. Assuming cost per square meter for previous similar project is RM600.00 (RM600.00/m²).

Berdasarkan Rajah B3a, Sediakan anggaran awalan untuk bangunan tersebut dengan menggunakan kaedah kepungan tingkat. Andaikan cost per meter persegi projek terdahulu yang hamper sama ialah RM600.00 (RM600.00/m²).



FLOOR PLAN



SECTION A - A

Diagram A1c: Proposed Shoplot

Rajah A1c: Cadangan Lot Kedai

[15 marks]

[15 markah]

CLO2
C4

- (b) There are various methods to prepare preliminary estimate. Based on Diagram B3b, analyze what is the **most appropriate** method to prepare preliminary estimate for the proposed new bungalow and give **THREE (3)** reasons why choosing the method.

Terdapat pelbagai kaedah untuk menyediakan anggaran awalan. Berdasarkan kepada Rajah B3b, Analisa apakah kaedah paling sesuai untuk menyediakan anggaran awalan terhadap banglo baru yang dicadangkan dan berikan TIGA (3) sebab mengapa kaedah tersebut dipilih..

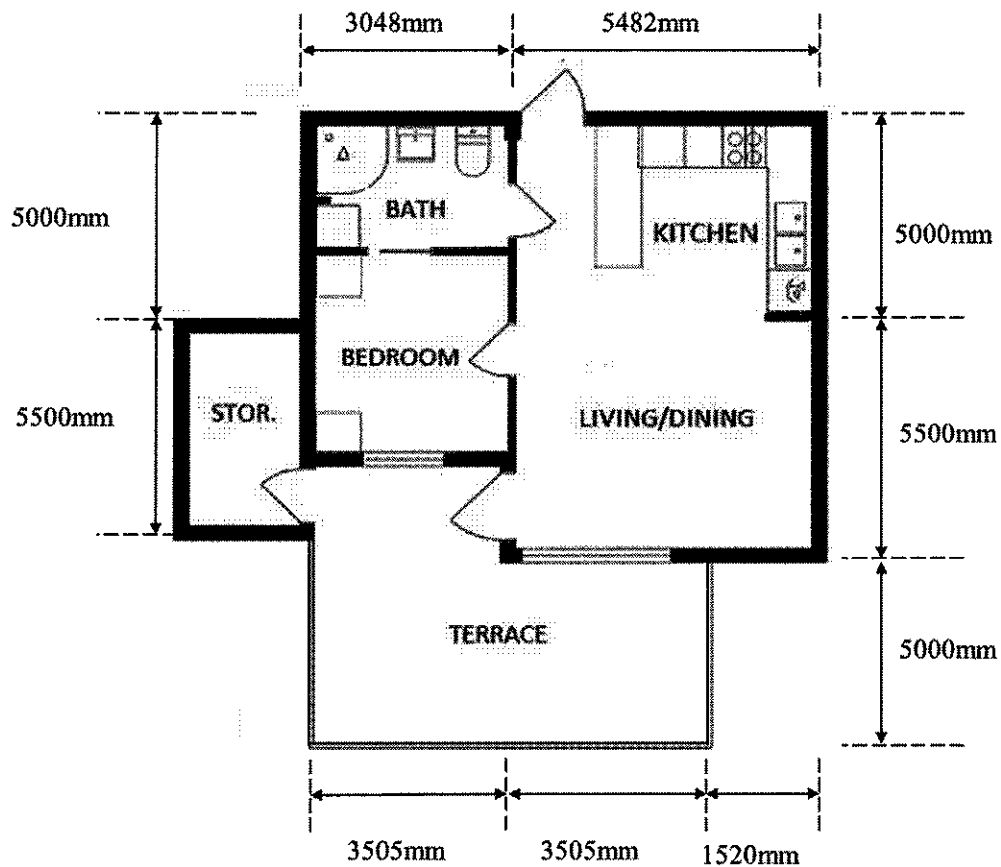


Diagram B3b: Proposed new bungalow

Rajah B3b: Cadangan banglo baru

[10 marks]

[02 markah]

QUESTION 4**SOALAN 4**CLO2
C3

- (a) Based on Schedule B4a, use the time and location indices to estimate the cost of a building that contains 35000m² of gross floor area. The building is to be constructed in year 2024 in City A. The cost of a similar type of building that contained 50500m² was completed in year 2020 in City C for a cost of RM2,500,000.00. Given the percentage of price change is 5% per year.

Gunakan indeks masa dan lokasi yang ditunjukkan di bawah untuk menganggarkan kos bangunan yang mempunyai 35000m² keluasan lantai kasar. Bangunan itu akan dibina pada tahun 2024 di Bandar A. Kos bangunan serupa yang mempunyai 50500m² telah siap tahun pada tahun 2021 di Bandar C dengan kos RM2,500,000.00. Diberikan peratus perubahan harga ialah 5% setahun.

Table A1b: Cost data of previous hospitals project

Jadual A1b: Data kos projek hospital terdahulu

Construction Economic Trends		Locations Cost Indices	
Year	Index	Location	Index
2019	358	City A	1.025
2020	359	City B	1.170
2021	367	City C	1.260
2022	378	City D	1.105
		City E	1.240

[15 marks]

[15 markah]

CLO2
C4

- (b) There are many sources of cost data to prepare cost estimate. Give **THREE (3)** reasons why bills of quantities are the main sources of information used by the quantity surveyor.

*Terdapat banyak sumber data kos untuk menyediakan anggaran kos. Berikan **TIGA (3)** sebab kenapa senarai kuantiti merupakan sumber maklumat utama yang digunakan oleh jurukur bahan.*

[10 marks]

[10 markah]

SOALAN TAMAT