SULIT

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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI II : 2021/2022

DCQ30122: ESTIMATING 1

TARIKH : 6 JULAI 2022
MASA : 11.30 AM – 1.30 PM (2 JAM)

Kertas ini mengandungi **LAPAN (8)** 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)

SECTION A: 50 MARKS
BAHAGIAN A: 50 MARKAH

INSTRUCTION:
This section consists of **THREE (3)** structured questions. Answer **all** questions.

ARAHAN:
*Bahagian ini mengandungi **TIGA (3)** soalan berstruktur. Jawab **semua** soalan.*

QUESTION 1
SOALAN 1

CLO 1
C2

(a) Material costs are among the main cost components in the construction of a project. Identify **FIVE (5)** sources where the contractor can obtain the current material's price in preparing the rates for tender pricing.

*Kos bahan adalah antara komponen kos utama dalam pembinaan sesuatu projek. Kenalpasti **LIMA (5)** sumber di mana kontraktor boleh mendapatkan harga bahan semasa dalam menyediakan kadar harga tender.*

[5 marks]
[5 markah]

CLO 1
C3

(b) The cost of materials can be considered as the main cost in a construction project. Explain **FIVE (5)** considerations in estimating any construction material costs.

*Kos bahan boleh dianggap sebagai kos utama dalam projek pembinaan. Terangkan **LIMA (5)** pertimbangan dalam menganggar sebarang kos bahan pembinaan.*

[10 marks]
[10 markah]

CLO 1
C3

(c) Explain why wastage cost should be considered in preparing the built-up rates for building cost estimation and give one example of wastage cost calculation.

Terangkan mengapa kos pembaziran harus dipertimbangkan dalam menyediakan kadar harga untuk anggaran kos bangunan.

[10 marks]
[10 markah]

QUESTION 2
SOALAN 2

CLO 1
C2

(a) By referring to the given cost data, estimate the material cost for concrete Grade 25 (1:1½:3).
Dengan merujuk kepada data kos yang diberikan, anggarkan kos bahan untuk konkrit Gred 25 (1:1½:3).

[5 marks]
[5 markah]

Data cost/ Kos data:

1. Cement/ *Simen* = RM15.40/bag (50kg)
2. Sand/ *Pasir* = RM 30.00 / m³
3. Aggregate/ *Batu baur* = RM 36.00/ m³
4. Shrinkage and wastage/ *Pengecutan dan pembaziran* = 50%

CLO 1
C3

(b) Calculate the cost of reinforced in-situ concrete Grade 25 (1:1½:3) in beam by using concrete mixer and placing by hand by referring material cost calculated in Question 2 (a) and the following cost data:

Kira kos konkrit tuang disitu bertetulang Gred 25 (1:1½:3) dalam rasuk dengan menggunakan pembancuh konkrit dan letak dengan tangan dengan merujuk kos bahan yang dikira dalam Soalan 2 (a) dan data kos berikut:

[10 marks]
[10 markah]

Data cost/ Kos data:

1.	Concrete mixer / *Pembancuh konkrit*	= 10/7 (3.25m3/hour)
2.	Economic life/ *Usia ekonomi*	= 5 years
3.	Initial cost/ *Kos permulaan*	= RM 20,000.00
4.	Scrap value/ *Nilai jual-balik*	= RM 5,000.00
5.	Loan interest/ *Faedah pinjaman*	= 7% per year
6.	Maintenance cost/ *Kos penyelenggaraan*	= 10% for 5 years
7.	Transportation cost/ *Kos pengangkutan*	= 5% for 5 years
8.	Diesel/ *Minyak diesel*	= RM 2.20/litre (1.80 litres/hour)
9.	Lubricant/ *Minyak pelincir*	= RM 22.00 /litre (0.07 litre/hour)
10.	Operator/ *Operator*	= RM 120.00 / day
11.	General labour/ *Buruh am*	= RM 100.00 / day (4 labours for mixing)
12.	Average working day/ *Purata hari kerja*	= 200 days/ year
13.	Labour for placing concrete/*Buruh meletak konkrit*	= RM100.00/day (8 hours/m3)

CLO 1
C3

(c) Calculate built up rates for 1 kilogram of 12mm diameter reinforcement bar in column including cutting, bending, and placing on site by referring to the data below:

Kira kadar harga bagi 1 kilogram bar tetulang saiz 12mm diameter di dalam tiang termasuk memotong, membengkok dan memasang di tapak dengan merujuk kepada data di bawah:

[10 marks]
[10 markah]

Data cost/ Kos data:

1.	12mm diameter reinforcement bar/ *12mm ukur lilit tetulang bar*	= RM 2,560.00/1000kg
2.	Wastage of reinforcement bar/ *Pembaziran tetulang bar*	= 5%
3.	Tying wire/ *Dawai pengikat*	= RM 6.50/kg
4.	Quantity for tying wire/ *Kuantiti dawai pengikat*	= 6 kg for 1 tonne
5.	Barbender/ *Tukang bar*	= RM 120.00/day
6.	General labour/ *Buruh am*	= RM 100.00/day
7.	Labour output for unloading *Buruh untuk memunggah*	= 1.50hr/tonne
8.	Labour output for cutting and bending/ *Output buruh untuk memotong dan melentur*	= 20hr/tonne
9.	Labour output for placing bars/ *Output buruh untuk meyusun bar*	= 35hr/tonne
10.	Profit and overhead/ *Keuntungan dan perbelanjaan*	= 15%

QUESTION 3

SOALAN 3

CLO 1
C2

(a) Tendering procedure is important to select the most qualified contractor for a construction project. Illustrate a flow chart of main tendering process.

Prosedur tender adalah penting untuk memilih kontraktor yang paling layak untuk sesebuah projek pembinaan. Lukiskan carta alir prosedur tender utama.

[5 marks]

[5 markah]

CLO 1
C3

(b) In tender pricing process, there are two types of tender document that are commonly used, namely contract based on drawings and specifications and contract based on bills of quantities. Explain **TWO (2)** main features of tender pricing based on bill of quantities and **TWO (2)** main features of tender pricing based on drawings and specifications.

*Dalam proses menghargakan tender, terdapat dua jenis dokumen tender yang biasa digunakan iaitu tender berdasarkan lukisan dan spesifikasi dan tender berdasarkan senarai kuantiti. Terangkan **DUA (2)** ciri utama menghargakan tender berdasarkan bil kuantiti dan **DUA (2)** ciri utama menghargakan tender berdasarkan lukisan dan spesifikasi.*

[10 marks]
[10 markah]

CLO 1
C3

(c) Explain the steps in pricing the tender document based on bills of quantities.

Terangkan langkah-langkah dalam menghargakan dokumen tender berdasarkan senarai kuantiti.

[10 marks]
[10 markah]

SECTION B: 25 MARKS

BAHAGIAN B: 25 MARKAH

INSTRUCTION:
This section consists of **ONE (1)** essay question. Answer **all** questions.

ARAHAN:
*Bahagian ini mengandungi **SATU (1)** soalan esei. Jawab **semua** soalan.*

QUESTION 4

SOALAN 4

CLO 1
C3

(a) By referring to the given cost data, construct the built-up rate for two coats of emulsion paint to general surfaces of plastered wall over 300mm girth internally – m².

Dengan merujuk kepada penerangan dan kos data di bawah, bina kadar harga untuk dua lapis cat emulsi untuk permukaan dalaman dinding lepa melebihi 300mm ukur lilit – m².

[10 marks]
[10 markah]

Data cost/ Kos data:

1. Emulsion paint/ *Cat emulsi* = RM120.00/tin (5litre)
2. First layer coat/ *Lapisan cat pertama* = 8 litres
3. Second layer coat/ *Lapisan cat kedua* = 8 litres
4. Painter/ *Tukang cat* = RM 100.00/day
5. Prepare surface/ *Menyedia permukaan* = 2 hours/100m2
6. Applying emulsion coat/*Mengecat selapisan emulsi* = 9 hours/100m2
7. Brush Usage/ *Penggunaan berus* = 5%
8. Profit and overhead/ *Keuntungan dan perbelanjaan* = 15%

CLO 1
C3

(b) By referring to the description and data below, construct the built-up rate for 16mm thick cement and sand (1:6) plaster to isolated column with steel troweled finish. – m²

Dengan merujuk kepada data di bawah, bina kadar harga untuk 16mm tebal simen dan pasir (1: 6) lepa ke tiang terasing dikemaskan dengan keluli. - m²

[15 marks]
[15 markah]

Data cost/ Kos data:

1. Cement (28 bags)/ *Simen (28 beg)* = RM 17.00/ bag (50kg)
2. Sand/ *Pasir* = RM 45.00/ m³
3. Plasterer/ *Tukang lepa* = RM 110.00/ day
4. Operator/ *Operator* = RM 100.00/ day
5. General labour/ *Buruh am* = RM 80.00/ day
6. Labour output for plastering / *Masa buruh untuk mengecat* = 0.40 hour/m²
7. Additional for narrow space / *Tambahan untuk ruang sempit* = 25%
8. $5/3\frac{1}{2}$ Concrete mixer rental rate/ *Kadar sewa pembancuh konkrit* $5/3\frac{1}{2}$ = RM 260/ month (1.25m3/hour)
9. Working day per month/ *Bilangan hari kerja* = 26 days
10. Diesel/ *Diesel* = RM 2.20/litre (1.1 litre/hour)
11. Lubricant/ *Minyak pelincir* = RM22.00/litre (0.04 litre/hour)

SOALAN TAMAT