SULIT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI II : 2022/2023

DCQ30122: ESTIMATING 1

TARIKH : 12 JUN 2023
MASA : 2.30 PTG – 4.30 PTG (2 JAM)

Kertas ini mengandungi **TIGA BELAS (13)** halaman bercetak.
Bahagian A: Subjective (2 soalan)
Bahagian B: Subjective (4 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 **TWO (2)** subjective questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **DUA (2)** soalan subjektif. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1

(a) Estimate the rate for 1m³ soil excavation not exceeding 1.00 m depth using an excavator.

Anggarkan harga bagi 1m³ pengorekkan tanah berkedalaman tidak melebihi 1.00 m menggunakan jentera pengorek.

Data:

Rental for backhoe of 0.5 m³ capacity 0.5 m³ (including payment for operator and fuel) *Sewa pengorek muatan 0.5 m³ (termasuk bayaran operator dan bahan bakar)*	RM 500.00 /day
Machine output *Pengeluaran jentera*	12 m³ /hour
Profit and overhead *Keuntungan dan overhed*	15%

[5 marks]

[*5 markah*]

CLO1 (b) Calculate the mixing cost for 1m³ reinforced in-situ concrete Grade 25 in isolated column.

Kira kos membancuh untuk 1m³ konkrit bertetulang tuang di situ Gred 25 untuk tiang terasing.

Data:

Concrete mixer initial cost (7/5) *Kos awalan pembancuh konkrit*	RM 20,000.00
Economic life *Usia ekonomi*	4 years
Average working day *Purata hari bekerja*	200 days/ years
Scrap value *Nilai jual balik*	RM 4,000.00
Loan interest *Faedah pinjaman*	10% /year
Maintenance cost *Kos penyelenggaraan*	10% / 4 years
Tansportation cost *Kos pengangkutan*	5% / 4 years
Diesel (output = 1.6 litre/hour) *Diesel*	RM 1.95/litre
Lubricant (output = 0.06 litre/hour) *Pelincir*	RM 30.00/litre
General labour (3 numbers of labour) Buruh biasa (3 orang pekerja)	RM 50.00/day
Operator *Operator*	RM 100.00/day
Mixer output *Output mesin pembancuh*	2.25m³/hour

[10 marks]

[*10 markah*]

CLO1 (c) Calculate the built-up rate for 1m³ concrete 1:1½:3 – 20mm aggregate for ground beam.

Kira bina kadar harga bagi 1m³ konkrit 1:1½:3 – 20mm batu baur untuk rasuk tanah.

Data:

Cement *Simen*	RM 18.50 / bag
1m³ cement *1m³ simen*	28 bags
1m³ sand *1m³ pasir*	RM 40.00
1m³ aggregate *1m³ batu baur*	RM 60.00
Labour output for mixing *Output buruh bagi kerja membancuh*	2.50 hours
Labour output for moving, depositing and vibrating concrete *Output buruh mengangkat, meletak dan memampatkan konkrit*	6 hours
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 50.00/day
Profit and overhead *Keuntungan dan overhed*	20%

[10 marks]

[*10 markah*]

QUESTION 2

SOALAN 2

CLO1 (a) Explain the scope of work for skilled labour and unskilled labour in reinforcement work.

Terangkan skop kerja buruh mahir dan buruh tidak mahir dalam kerja tetulang.

[5 marks]

[*5 markah*]

CLO1 (b) Calculate the built-up rate for 1kg of 20mm diameter reinforcement bar in suspended beam including cutting, bending and placing on-site.
Kira bina kadar harga bagi 1kg besi tetulang 20mm diameter di dalam rasuk aras atas termasuk kerja-kerja memotong, membengkok dan memasang di tapak.

Data:

1 tonne reinforcement (20mm diameter) *1 tan tetulang (20mm diameter)*	RM 4000/tonne
Wastage & spacer block *Pembaziran dan blok peruang*	5%
Tying wire (6 kg) *Dawai pengikat (6 kg)*	RM 7.00/kg
Skilled labour rates *Kadar upah buruh mahir*	RM80.00/day
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 50.00/day
Unloading bar 1000kg reinforcement *Memunggah tetulang 1000kg tetulang*	1.5 hours
Labour output for cutting, bending 1000kg reinforcement *Output buruh memotong dan membengkok 1000kg tetulang*	20 hours
Labour output for placing 1000kg reinforcement *Output buruh meletakkan 1000kg tetulang*	35 hours
Profit & overhead *Keuntungan dan overhed*	15%

[10 marks]
[*10 markah*]

CLO1

(c) Calculate the built-up rate for 1m² formwork to upper floor slab.
Kira bina kadar harga bagi 1m² acuan konkrit ke lantai atas.

Data:

Plywood 2.40m x 1.20m x 12mm thick *Papan lapis*	RM 50.00/piece
Supporter wood *Kayu penyokong*	RM 500.00/m³
Supporter wood usage for 1m² formwork *Kayu penyokong untuk 1m² acuan*	0.06m³
Formwork usage *Penggunaan acuan*	6 times
Nail rate *Harga paku*	RM 5.00/kg
Nail usage *Penggunaan paku*	0.35kg/m²
Carpenter output to prepare and install formwork *Output tukang kayu untuk sediakan dan pasang acuan*	1 hour
General labour output to prepare and install formwork *Output buruh biasa untuk sediakan dan pasang acuan*	0.75 hour
General labour output to open disassembling and storing *Output buruh menanggalkan dan menyimpan*	0.75 hours
Carpenter wages *Upah tukang kayu*	RM 80.00/day
General labour wages *Upah buruh am*	RM 50.00/day
Wastage 10% *Pembaziran 10%*	
Profit & overhead *Keuntungan dan overhed*	15%

[10 marks]
[*10 markah*]

SECTION B: 50 MARKS

BAHAGIAN B :50 MARKAH

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1

SOALAN 1

CLO1 (a) Most construction companies fail to consider the overhead costs when preparing a bid, creating potential problems later. Ignoring overhead costs can affect the profit margins, project lifecycle, and cash flow for operations. Interpret **SIX (6)** characteristics of overhead costs.

*Kebanyakan syarikat pembinaan gagal untuk mempertimbangkan kos overhed semasa menyediakan tawaran, mewujudkan potensi masalah kemudian. Mengabaikan kos overhed boleh menjejaskan margin keuntungan, kitaran hayat projek dan aliran tunai untuk operasi. Tafsirkan **ENAM (6)** ciri kos overhed.*

[12 marks]

[12 *markah*]

CLO1

(b) Calculate the built-up rate for 1 m² half brick wall in common brick (1:6) mortar with brick reinforcement at every fourth course.
Kira bina kadar harga bagi 1 m² dinding setengah bata, bata biasa (1:6) mortar dengan tetulang bata setiap empat lapisan.

Data:

Brick per 100pcs *Block per 100 no*	RM 45.00
Brick usage (including watage) *Bilangan bata yang digunakan (termasuk pembaziran)*	63 nos
Mortar cost *Kos mortar*	RM 160.00/m³
Mortar usage *Mortar yang digunakan*	0.025m³/m²
Brick reinforcement usage *Tetulang bata yang digunakan*	3.60 meter/m²
Brick reinforcement *Tetulang bata*	RM 1.00/m
Bricklayer output *Output tukang bata*	1 hour
Unskilled labour output *Output buruh tidak mahir*	0.35 hour
Bricklayer rates *Kadar upah tukang bata*	RM 70.00/day
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 50.00/day
Profit and overhead *Keuntungan dan overhed*	15%

[13 marks]
[*13 markah*]

QUESTION 2

SOALAN 2

CLO1 (a) Calculate the built-up rate for $1m^2$ for 20 mm thick plastering works (1:1:6) cement and sand to wall.

Kira bina kadar harga bagi $1m^2$ untuk 20 mm tebal kerja lepaan (1:1:6) simen dan pasir ke permukaan dinding.

Data:

Cement *Simen*	RM 19.50 / bag
$1m^3$ cement *$1m^3$ simen*	28 bags
$1m^3$ lime *$1m^3$ kapur*	40 bags
Lime *Kapur*	RM 5.00/bags
$1m^3$ sand *$1m^3$ pasir*	RM 40.00
Wastage *Pembaziran*	33.33%
Mortar usage *Mortar yang digunakan*	$0.020m^3/m^2$
Plasterer rates *Kadar upah tukang lepa*	RM 80.00/day
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 50.00/day
Labour output for mixing *Output buruh bagi kerja membancuh*	2 hours
Plasterer output *Output tukang lepa*	0.5 hour/m^2
General labour output (assist plasterer) *Output buruh biasa (membantu tukang lepa)*	0.5 hours/m^2
Profit and overhead *Keuntungan dan overhed*	15%

[12 marks]

[*12 markah*]

(b) Calculate the built-up rate for 1 m² of 150mm x 150mm x 7mm thick white glazed wall tile bedded and jointed in cement paste and pointed in white cement to wall on screeded backing.

Kira bina kadar harga bagi 1 m² jubin kaca dinding 150mm x 150mm x 7mm tebal yang dilikat dengan pelekat simen ke dinding pada permukaan kasar.

Data:

Glazed tile *Jubin kaca*	RM 3.50/pcs
No of tiles *Bilangan jubin* Wastage 5% *Pembaziran 5%*	44 pcs/m^2
Cement *Simen*	RM 18.50 / bag
1m^3 cement *1m^3 simen*	28 bags
Tiles & cement paste wastage *Pembaziran jubin & pekatan simen*	5%
Cement paste usage *Penggunaan pekatan simen*	0.02 m^3
Tiler wages *Upah tukang jubin*	RM 80.00/day
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 50.00/day
Tiler output *Output tukang jubin*	1.9 hours/m^2
General labour output *Output buruh biasa*	1 hours/m^2
Labour output for mixing cement paste *Output buruh bagi membancuh pekatan simen*	2 hours
Profit and overhead *Keuntungan dan overhed*	15%

[13 marks]

[*13 markah*]

QUESTION 3

SOALAN 3

CLO1 (a) Calculate the built-up rate for 1 m² of 300mm x 300mm x 7mm thick homogenous tile bedded and jointed in cement paste and pointed in cement paste to floor level on screeded bed.

Kira bina kadar harga bagi 1 m² jubin homogenous 300mm x 300 mm x 7mm tebal yang di ikat dengan pelekat simen ke aras lantai pada permukaan kasar.

Data:

Homogenous tile *Jubin homogenous*	RM 4.50/pcs
No of tiles *Bilangan jubin* Wastage 5% *Pembaziran 5%*	11 pcs/m^2
Cement *Simen*	RM 20.00 / bag
1m^3 cement *1m^3 simen*	28 bags
Tiles & cement paste wastage *Pembaziran jubin & pekatan simen*	5%
Cement paste usage *Penggunaan pekatan simen*	0.02 m^3
Tiler wages *Upah tukang jubin*	RM 70.00/day
Unskilled labour rates *Kadar upah buruh tidak mahir*	RM 40.00/day
Tiler output *Output tukang jubin*	0.75 hours/m²
General labour output *Output buruh biasa*	0.75 hours/m²
Labour output for mixing cement paste *Output buruh bagi membancuh pekatan simen*	2 hours/m^3
Profit and overhead *Keuntungan dan overhed*	20%

[12 marks]

[*12 markah*]

CLO1 (b) Calculate the built-up rate for 1 m² of painting with one undercoat and two finishing coats of acrylic weather resistant emulsion paint to plastered wall surfaces and column.

Kira bina kadar harga bagi kerja mengecat 1 m² dengan satu lapisan cat alas dan dua lapisan kemasan cat emulsi tahan cuaca akrilik kepada permukaan dinding dan tiang yang dilepa.

Data:

Under coat / *Cat alas*	RM 65 / tin (5 litre)
Finish coat / *Cat kemas*	RM 85 / tin (5 litre)
Under coat / *Cat alas*	8 litre for 100m2 to plastered wall surface
Finish coat / *Cat kemas*	7 litre 100m2 to plastered wall surface
Applying under coat *Menyapu cat alas*	8 hours for 100m^2 to plastered wall surface
Applying Finish coat *Menyapu cat kemas*	9 hours for 100m^2 to plastered wall surface
Painter wages / *Upah tukang cat*	RM 60/day
Allowance for brush usage *Peruntukan untuk berus*	5%
Profit and overhead *Keuntungan dan overhed*	15%

[13 marks]

[*13 markah*]

QUESTION 4

SOALAN 4

CLO1 (a) Interpret the process of tender pricing for document tender based on drawing and specification.

Takrifkan proses menghargakan tender bagi dokumen tender yang berdasarkan lukisan dan spesifikasi.

[12 marks]

[*12 markah*]

CLO1 (b) Determine the important items that should be filled by the tenderers in the Form of Tender.

Tentukan item penting yang perlu dimasukkan oleh petender di dalam Borang Tender.

[13 marks]
[*13 markah*]

SOALAN TAMAT