SULIT

POLITEKNIK MALAYSIA

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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI DISEMBER 2018

DCC2073 : CONTRACT AND ESTIMATING

TARIKH : 21 APRIL 2019
MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)

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

Bahagian A: Struktur (2 soalan)
Bahagian B: Struktur (4 soalan)

Dokumen sokongan yang disertakan : Slip Sort

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)** structured questions. Answer **ALL** questions.

ARAHAN:

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

QUESTION 1

SOALAN 1

CLO1
C1

(a) There are seven (7) activities involved in construction. State any **FIVE (5)** activities only.

*Terdapat tujuh (7) aktiviti yang terlibat dalam pembinaan. Nyatakan mana-mana **LIMA (5)** aktiviti sahaja.*

[5 marks]

[*5 markah*]

CLO1
C2

(b) A subcontractor is an individual or company that signs a contract to perform a specific work as part of the overall project. Compare between :

Subkontraktor adalah individu atau syarikat yang menandatangi kontrak untuk melaksanakan tugasan yang tertentu sebahagian dari keseluruhan projek. Bandingkan antara:

i. Domestic Sub-Contractor

Subkontraktor Domestik

ii. Nominated Sub-contractor

Subkontraktor Dinamakan.

[10 marks]

[*10 markah*]

CLO1
C3

(c) Turnkey Contract is another contracting method used in construction industry. Interpret **FIVE (5)** characteristics of the contract.

*Kontrak Turnkey merupakan salah satu kaedah kontrak yang digunakan dalam industry pembinaan. Tafsirkan **LIMA (5)** ciri-ciri kontrak tersebut.*

[10 marks]

[*10 markah*]

QUESTION 2

SOALAN 2

CLO1
C1

(a) List **FIVE (5)** types of tender practiced in Malaysia.

*Senaraikan **LIMA (5)** jenis tawaran yang diamalkan di Malaysia.*

[5 marks]

[*5 markah*]

CLO1
C2

(b) Discuss **FIVE (5)** reasons of tender rejected.

*Bincangkan **LIMA (5)** sebab kenapa sesebuah tawaran ditolak.*

[10 marks]

[*10 markah*]

CLO1
C3

(c) Interpret the content of tender document as below:

Tafsirkan senarai kandungan dokumen tender seperti berikut:

i. Contract form / *Borang kontrak*

ii. Letter of intent / *Surat niat*

iii. Letter of acceptance / *Surat setuju terima*

iv. Working standard specification / *Spesifikasi piawaian kerja*

v. Schedule of rate / *Jadual kadar harga*

[10 marks]

[*10 markah*]

SECTION B : 50 MARKS

BAHAGIAN B : 50 MARKAH

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1

SOALAN 1

CLO2
C3

(a) **Table B1(a)** shows the construction cost of schools in 2007, calculate the cost of constructing a new school in Sungkai which is expected to accommodate about 1000 chairs in year 2016 if the factor of increment is 7% per year.

***Jadual B1(a)** menunjukkan kos pembinaan sekolah pada tahun 2007, kirakan kos membina sebuah sekolah baharu di Sungkai yang dijangka menampung kira-kira 1000 kerusi pada tahun 2016 jika faktor kenaikan adalah 7% setahun.*

Table B1(a): Construction Cost of Schools

Jadual B1(a): Kos Pembinaan Sekolah

Type (*Jenis*)	No. of chairs (*Bilangan Kerusi*)	Location (*Lokasi*)	Construction Cost ,RM (*Kos Pembinaan, RM*)	Year of construction (*Tahun Pembinaan*)
School A	900	Tanjung Malim	800 000	2007
School B	850	Behrang	750 000	2007
School C	780	Proton City	650 000	2007
School D	920	Slim River	900 000	2007

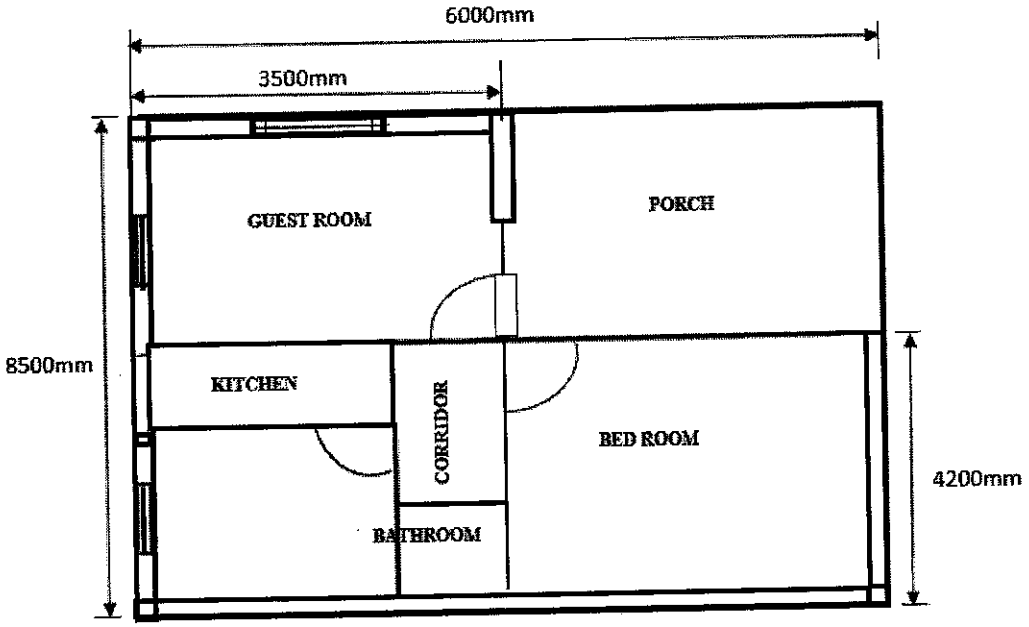
[10 marks]

[*10 markah*]

CLO2
C4

(b) Based on **Figure B1(b)**, calculate the building cost by using Floor Area Method. Cost for $1m^2$ is RM $305.00/m^2$.

*Berdasarkan **Rajah B1(b)**, kirakan kos bangunan tersebut dengan menggunakan Kaedah Keluasan Lantai. Kos bagi $1m^2$ adalah RM $305.00/m^2$.*



PLAN VIEW

Figure B1(b) / *Rajah B1(b)*

[10 marks]

[*10 markah*]

CLO2
C6

(c) Refer to the **Figure B1(c)**, measure the total of height to estimate the building cost.

*Berdasarkan **Rajah B1(c)**, ukur jumlah ketinggian untuk membuat anggaran kos bangunan.*

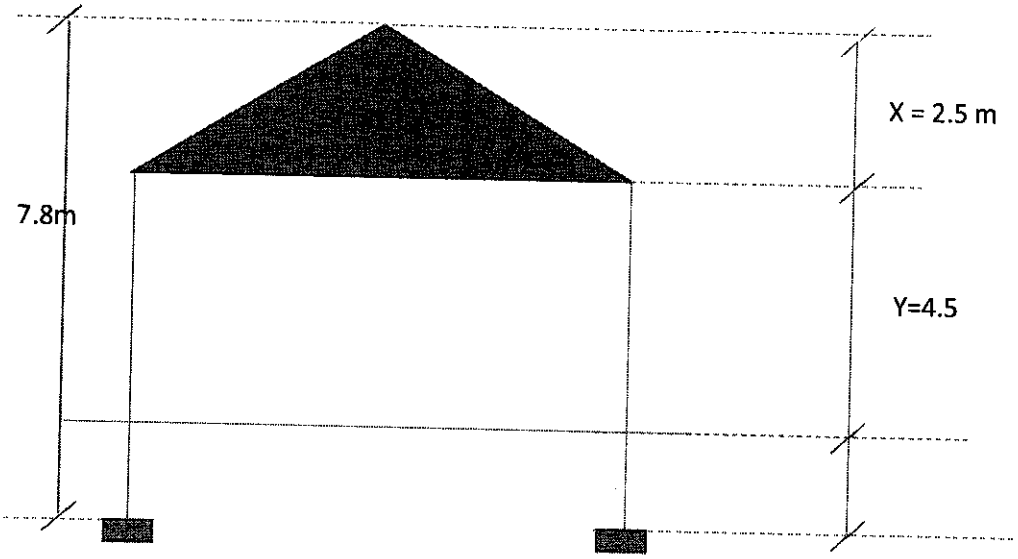


Figure B1(c) / *Rajah B1 (c)*

[5 marks]

[*5 markah*]

QUESTION 2

SOALAN 2

CLO2
C3

(a) Based to the information **Table B2(a)** givens, calculate build up cost of mixing concrete manually. Reinforced concrete in-situ Grade 25 in isolated column – (price/m^3).

*Berdasarkan maklumat **Jadual B2(a)** yang diberi, kirakan kadar bina harga bagi kerja membancuh konkrit menggunakan tangan seperti maklumat berikut. Konkrit tetulang in-situ Gred 25 bagi tiang terpencil - (Harga/m^3):*

Table B2(a): Mixing Concrete Data

Jadual B2(a): Data Bancuhan Konkrit

Important information: *Maklumat penting*	
Concrete grade 25 (1 : 1.5 : 3) *Konkrit Gred 25 (1 : 1.5 : 3)*	
1 m^3 cement (50kg) *1 m^3 simen (50kg)*	= 28.7 bags
Price of a bag of cement *Harga bagi 1 beg simen*	= RM 16.00
Price of 1 m^3 sand *Harga bagi 1 m^3 pasir*	= RM 26.00
Price of 1 m^3 coarse aggregate *Harga bagi 1 m^3 batu baur kasar*	= RM 35.00
Increase in volume due to shrinkage, wastage and compaction of concrete *Tambahan 50% pengecutan, pembaziran dan kepadatan konkrit*	= 50%
Labour cost for 1 worker per day (8 hour) *Kos buruh bagi 1 orang pekerja sejam sehari (8 jam)*	= RM 40.00
Labour constant cost for mixing concrete using hand *Angkatap buruh untuk menggaul konkrit menggunakan tangan*	= 2.5 hour/m^3
Labour constant cost for transporting and casting concrete	= 8.00 hour/m^3

into formwork per day *Angkatap buruh untuk memindah dan mengacu konkrit sehari*	
Overhead cost and profit *Kos keuntungan dan overhed*	= 25%

[10 marks]

[*10 markah*]

CLO2
C4

(b) Based to the information **Table B2 (b)** given, calculate capital cost and operation cost for concrete mixing machine 7/5 per hour. Reinforced concrete in-situ grade 25 in isolated column – (price/hour):

*Berdasarkan maklumat **Jadual B2 (b)** yang diberi, kirakan kos modal dan kos operasi bagi mesin pembancuh konkrit 7/5 sejam. Konkrit tetulang in-situ Gred 25 untuk sesebuah tiang. (Harga/jam):*

Table B2(b): Mixing Concrete Data

Jadual B2(b): Data Bancuhan Konkrit

Important information: ***Maklumat penting:***	
Types of concrete mixer machine 7/5 *Jenis mesin pembancuh konkrit 7/5*	
Economical age *Usia ekonomikal*	= 5 years
Price of concrete mixer machine *Harga mesin pembancuh konkrit*	= RM 20,000.00
Rates of transport machinery to the construction site for 5 years *Kos pemindahan mesin daripada tapak bina ke tapak bina untuk 5 tahun*	= 1/20 of original price
Bank interest cost a year *Kadar faedah bank setahun*	= 10%
Cost of repairing machine for 5 years	= 10%

Kos selenggara mesin untuk 5 tahun	
The number of days using the machine for a year *bilangan hari mesin bekerja untuk setahun*	= 200
Diesel consumed per day *Penggunaan diesel per hari*	= 1.60litre/hour
Lubricant oil consumed per day *Penggunaan minyak pelincir per hari*	= 0.06litre/hour
Cost of lubricant oil *Harga minyak pelincir*	= RM 6.00/litre
Cost of diesel *Harga diesel*	= RM 2.05/litre
Working period *Hari bekerja*	= 8.00 hour/day
Labour cost per day (Operator) *Kos buruh per hari (Operator)*	= RM 50.00/day
Labour cost per day (Assistance) *Kos buruh per hari (Pekerja biasa)*	= RM 40.00/day
Operator *Operator*	1 person
Assistances *Pembantu*	3 person
Overhead cost and profit *Kos lebihan dan keuntungan*	25%

[10 marks]

[*10 markah*]

CLO2
C6

(c) Refer to **Question B2 (b)** and **Table B2(c)**, estimate price for $1m^3$ concrete work using concrete mixing machine 7/5 - (Price/m^3).

Merujuk kepada ***Soalan B2 (b) dan Jadual B2(c)****, anggarkan harga bagi* $1m^3$ *konkrit menggunakan mesin pembancuh konkrit 7/5 -* $(harga/m^3)$.

Table B2(c): Mixing Concrete Data

Jadual B2(c): Data Bancuhan Konkrit

Important information/*Maklumat penting:*	
Production capability for concrete mixer machine 7/5 *Keupayaan mesin pembancuh konkrit 7/5*	= 2.25 m^3/hour
Material cost for Concrete grade 25 (1 : 1.5: 3) *Harga konkrit bagi gred 25 (1 : 1.5 : 3)*	= RM 163.10/m^3
Capital cost and operation cost for concrete mixer machine 7/5 *Kos modal dan Kos operasi bagi mesin pembancuh konkrit 7/5*	= refer answer of question 2 (b)
Overhead cost and profit *Kos overhed dan keuntungan*	= 25%

[5 marks]

[*5 markah*]

QUESTION 3

SOALAN 3

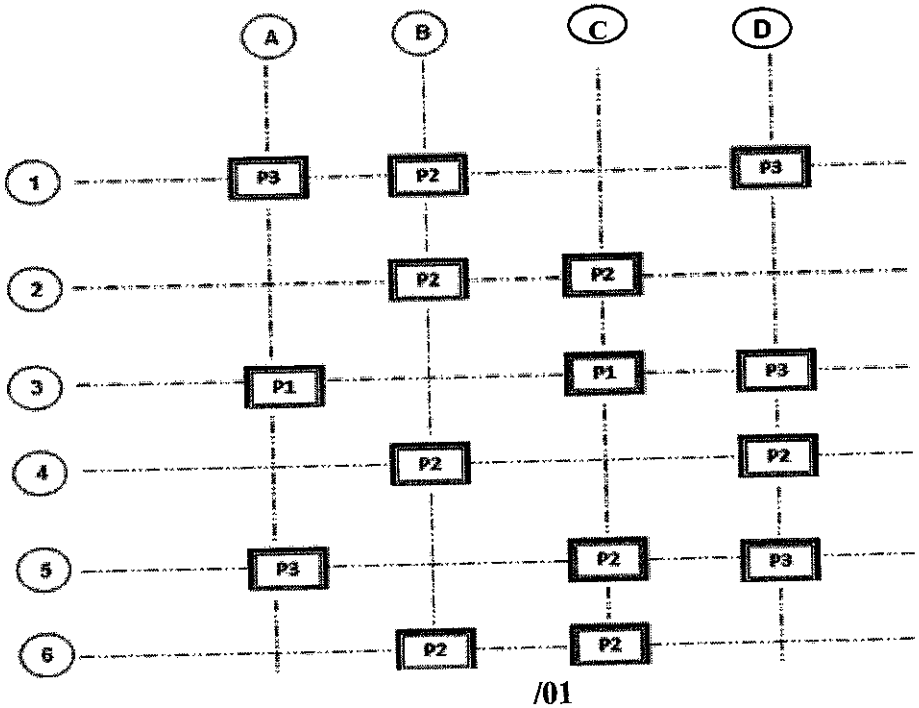
CLO2
C3

(a) Based on Drawing No. **JKA/PILING/01**, calculate quantity of piling works below:

Merujuk kepada Lukisan No. ***JKA/PILING/01,*** *kirakan kuantiti bagi kerja cerucuk dibawah:*

i. Supply of Initial piles (no) / *Membekal cerucuk permulaan*

ii. Supply of Extension piles (no) / *Membekal cerucuk sambungan*



/01

NOTES:

1. All pile is precast reinforced concrete pile/ *Semua cerucuk adalah dari jenis cerucuk konkrit pratuang bertetulang*
2. All pile should be in 300mm diameter/ *semua cerucuk berdiameter 300mm*
3. Supply length of pile shall be/ *Panjang Cerucuk yang dibekalkan adalah:*
   i. Starter pile/ *Cerucuk permulaan: 6.00 m long*
   ii. Extension pile / *Cerucuk sambungan: 6.00 m long*
3. Estimated penetration depth is 35 meter/ *Anggaran kedalaman kadar penembusan ialah 35 meter.*
4. Working load/*Beban kerja*: 40 tonnes per pile/ *40 ton setiap piles*
5. Allow 2 no. of testing for each group and single pile/ *Membenarkan 2 ujian bagi setiap kumpulan dan cerucuk tunggal*
6. The test load to twice working load shall be maintained for 48 hours./ *Beban ujian adalah dua kali beban kerja hendaklah dikekalkan selama 48 jam*
7. Legend/ Petunjuk:
   i. P1 – pile cape with 1 point/ *cerucuk dengan 1 point*
   ii. P2 – pile with 2 point/ *cerucuk dengan 2 point*
   iii. P3 – pile cap with 3 point/ *cerucuk dengan 3 point*

[10 marks]

[*10 markah*]

CLO2
C4

(b) Based on **Figure B3(a)** given, calculate **weighting depth** of cut and fill by using square method.

Merujuk kepada ***Rajah B3(a)*** *yang diberi, kirakan* ***weighting depth*** *bagi pengorekan dan penambakan dengan menggunakan kaedah Segiempat.*

Given / *Diberi:*

Interval / *Sela* = 5 m

Formation level / *Aras Pembentukan* = 65 m

	1	2	3	4
A	53.24	56.15	52.66	57.5
B	53.24	55.15	52.66	55.5
C	51.24	54.15	52.66	56.5
D	50.24	52.15	51.66	57.3

Figure B3a/Rajah B3a: Grid Contour/ Grid Kontur

[10 marks]
[*10 markah*]

CLO2
C6

(c) Refer to the weighting depth schedule from **Question 3(b)**, estimate the quantity of earthwork.

Merujuk kepada jadual weighting depth daripada ***Soalan 3(b)****, anggarkan kuantiti kerja tanah.*

[5 marks]
[*5 markah*]

QUESTION 4

SOALAN 4

CLO2
C3

(a) Based on Drawing No. **JKA/Q3/01**, calculate the quantity for the following items:

Berdasarkan Lukisan No. ***JKA/Q3/01****, kirakan kuantiti bagi item berikut:*

i. Formwork

Kotak bentuk

ii. Lean concrete

Konkrit alas

[10 marks]

[*10 markah*]

CLO2
C4

(b) Based on Drawing No. **JKA/Q3/01**, calculate the quantity for the following items:

Berdasarkan Lukisan No. ***JKA/Q3/01****, kirakan kuantiti bagi item berikut:*

i. Vibrated reinforced concrete

Konkrit terpadat bertetulang

ii. Reinforcement bar

Bar tetulang

[10 marks]

[*10 markah*]

CLO2
C6

(c) Prepare taking off list for pad foundation.

Sediakan senarai kuantiti bagi asas pad.

[5 marks]

[*5 markah*]

SOALAN TAMAT

Job.	Bill No			Element No	No Slip
Heading					
Description:					Unit:
					Quantity:

SLIP SORT FORM