SULIT

POLITEKNIK MALAYSIA

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

JABATAN KEJURUTERAAN MEKANIKAL

PEPERIKSAAN AKHIR

SESI JUN 2018

DJF6102: QUALITY CONTROL

TARIKH : 27 OKTOBER 2018
MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)

Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Buku Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

INSTRUCTION:
This section consists of **FOUR (4)** structured questions. Answer **ALL** the questions.

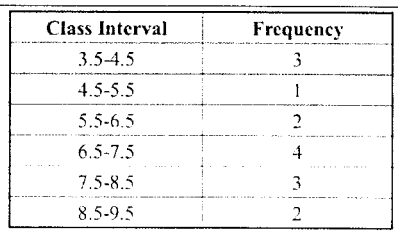
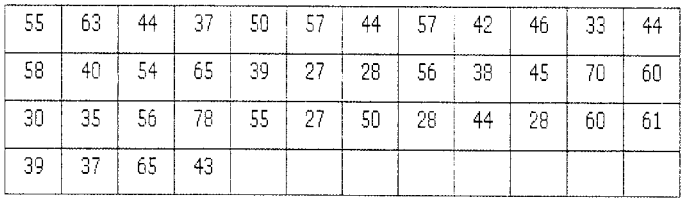
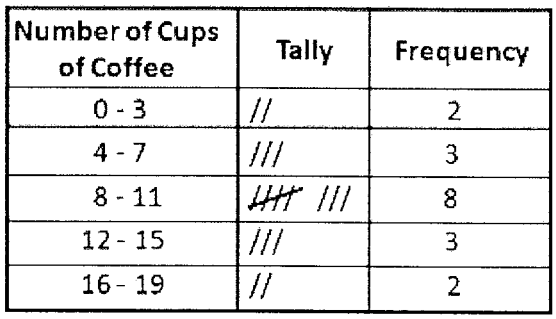
ARAHAN:
*Bahagian ini mengandungi **EMPAT (4)** soalan struktur. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO1
C2

(a) Classify the following data in **Table Q1(a)** either group or ungroup data.
*Klasifikasikan data dalam **Jadual S1(a)** berikut sama ada data terkumpul atau data tidak terkumpul.*

Table Q1(a) / *Jadual S1(a)*

Number	Data	Types of Data
1		
2		
3		
4	The shoe sizes of 10 people in a survey are: 8, 9, 9, 7, 10, 6, 7, 8, 9, 7	

[4 marks]
[*4 markah*]

CLO1
C3

(b) The following data in **Table Q1(b)** represents the age distribution of a sample of 100 people covered by health insurance (private or government). Calculate:

i- Mean

ii- Standard deviation

*Data berikut dalam **Jadual S1(b)** menunjukkan taburan umur bagi 100 sampel yang dilindungi insurans kesihatan (swasta atau kerajaan). Kirakan:*

i- Purata

ii- Sisihan Piawai

Table Q1(b) / *Jadual S1(b)*

Midpoint	Frequency
29.5	23
39.5	29
49.5	28
59.5	20

[7 marks]
[*7 markah*]

CLO1
C3

(c) Illustrate $\bar{x}$ and s chart for the following data in **Table Q1(c)**.

Gambarkan carta $\bar{x}$ and s bagi data yang berikut dalam ***Jadual S1(c)***.

Table Q1(c) / *Jadual S1(c)*

Sample Number	$\bar{x}$-chart				s-chart			
	$\bar{x}$	CL	UCL	LCL	s	CL	UCL	LCL
1	91	97.72	112.62	82.83	14.47	7.62	19.56	0
2	95.10				5.08			
3	92				5.9			
4	107.83				13.94			
5	101.13				5.74			
6	102.47				4.42			
6	99.83				5.46			
8	94.2				10.93			
9	92				2.71			
10	100.83				7.57			

[7 marks]
[*7 markah*]

CLO1
C4

(d) Interpret the following data in **Table Q1(d)** by calculating the Upper Control Limit (UCL), Lower Control Limit (LCL) and Center Line (CL). Sample size, n = 5.

Tafsirkan data bagi ***Jadual S1(d)*** *dengan mengira nilai Had Kawalan atas, Had Kawalan bawah dan garisan tengah. Saiz sampel, n=5.*

Table Q1(d) / *Jadual S1(d)*

$\bar{x}$	R
10.5	2.1
10.4	1.3
10.0	0.4
10.5	1.2
9.8	2.3

[7 marks]

[*7 markah*]

QUESTION 2
SOALAN 2

CLO1
C2

(a) Compare **FIVE (5)** differences between Traditional Management and Total Quality Management.
*Bandingkan **LIMA (5)** perbezaan Pengurusan Tradisional dan Pengurusan Kualiti Menyeluruh.*

[5 marks]
[*5 markah*]

CLO1
C3

(b) Relate the correct inspection method for the following characteristics in **Table Q2(b)**:
*Kaitkan kaedah pemeriksaan yang betul bagi ciri-ciri yang dinyatakan dalam **Jadual S2(b)** yang berikut:*

Table Q2(b) / *Jadual S2(b)*

Inspection Method *Kaedah Pemeriksaan*	**Characteristics** *Ciri-ciri*
	The first product that was produced from the lot will be inspected
	Some of the items were selected as a sample from a lot or batches based on sampling plan
	Performed after the product is fully completed (100 %). It is aiming to provide the level of confidence that satisfies standards
	Each item is inspected based on the product specification limit

[4 marks]
[*4 markah*]

CLO1
C2

(c) Explain the difference between Assignable Cause and Chance Cause. State **ONE (1)** example for each.

*Terangkan perbezaan antara variasi rawak dan variasi bersebab. Nyatakan **SATU (1)** contoh bagi setiap satu.*

[6 marks]
[*6 markah*]

CLO1
C3

(d) Inspection results of defect item on the shipments to the customer for 10 consecutive days are given in the Table 2(d). Draw np-chart together with the Upper Control Limit (UCL), Lower control Limit (LCL) and Center Line (CL) on the plotted chart.

Keputusan pemeriksaan bagi kerosakan produk yang berlaku semasa diposkan kepada pelanggan dalam 10 hari yang berturut-turut adalah seperti dalam Jadual 2(d). Lukiskan carta-np yang menunjukkan Had Kawalan atas, Had Kawalan bawah dan garisan tengah dalam carta yang dibina.

[10 marks]
[*10 markah*]

Table Q2(d) / *Jadual S2(d)*

Lot Number	Sample Size	Non-conforming
1	300	5
2	300	7
3	300	4
4	300	6
5	300	4
6	300	3
7	300	3
8	300	1
9	300	5
10	300	2

QUESTION 3
SOALAN 3

CLO2
C2

(a) Identify **FIVE (5)** situations to use acceptance sampling.
*Kenalpasti **LIMA (5)** situasi untuk menggunakan persampelan penerimaan.*

[5 marks]
[*5 markah*]

CLO2
C4

(b) Given the following sampling plan, N=1500, n=150 and c=3. Use the Cumulative Poisson Distribution Table and fill in Table 3(b) below. Develop the Operational Characteristics (OC) Curve and from the curve, find the value of 'good lot that will be rejected' for AQL=0.95%.
Diberi pelan persampelan, N=1500, n=150 dan c=3. Dengan menggunakan Jadual Kumulatif Taburan Poisson dan lengkapkan Jadual 3(b) di bawah. Bangunkan Lengkung Ciri Operasi (OC) dan dengan lengkung tersebut, cari nilai 'lot baik yang akan ditolak' untuk AQL = 0.95%.

Table Q3(b) / *Jadual S3(b)*

p	np	Pa
0.01	1.5	
0.02	3.0	
0.03	4.5	
0.04	6.0	
0.05	7.5	
0.06	9.0	
0.07	10.5	

[8 marks]
[*8 markah*]

CLO2
C2

(c) Describe **FOUR (4)** cost of quality with **ONE (1)** of them with an example.
*Huraikan **EMPAT (4)** kualiti kos dengan **SATU (1)** kualiti kos tersebut berserta contoh.*

[5 marks]
[*5 markah*]

CLO2
C3

(d) At the beginning of 2008, XYZ Company initiated a quality-improvement program. By the end of the year, the following financial data were collected for the preceding and current years in Table 3(d) below:

Pada awal 2008, Syarikat XYZ melaksanakan program menambahbaikan kualiti. Pada akhir tahun, berikut adalah data kewangan tahun semasa dan tahun sebelumnya yang dikumpul dalam Jadual 3(d) berikut:

Table Q3(d) / *Jadual S3(d)*

Items	2007	2008
Sales	RM10 000 000	RM10 000 000
Scrap	RM400 000	RM300 000
Rework	RM600 000	RM400 000
Product inspection	RM100 000	RM125 000
Product warranty	RM800 000	RM600 000
Quality training	RM40 000	RM80 000
Materials inspection	RM60 000	RM40 000

i. Translate all the items based on quality costs: prevention, appraisal, internal failure, or external failure.
Tentukan semua item berdasarkan kepada kos kualiti: pencegahan, taksiran, kegagalan dalaman dan kegagalan luaran.

ii. Calculate the total appraisal cost for 2007 and internal failure cost for 2008.
Kirakan jumlah kos taksiran 2007 dan kos kegagalan dalaman 2008.

[7 marks]
[*7 markah*]

QUESTION 4
SOALAN 4

CLO2
C3

(a) A printing machine provides a poor printing quality. The possible reasons are as follow:

- Speed of printer
- Maintenance frequency
- Paper
- Techniques of printing
- Less supervision
- Maintenance for tension adjustment
- Less of training
- Carbon types

Illustrate the cause and effect diagram and sort these reasons by the categories of machine, material, method and man.

Sebuah mesin cetak menghasilkan kualiti percetakan yang tidak memuaskan. Penyebabnya adalah berkemungkinan seperti di bawah:

- *Kelajuan pencetak*
- *Kekerapan senggaraan*
- *Kertas*
- *Teknik cetakan*
- *Kurang pemantauan*
- *Senggaraan untuk pelarasan tegangan*
- *Kurang latihan*
- *Jenis karbon*

Bina gambarajah sebab dan akibat dan susun penyebab ini berdasarkan kategori mesin, bahan, kaedah dan manusia.

[7 marks]
[*7 markah*]

CLO2
C4

(b) Hotel Sentosa obtained a list of complaints from their customers as shown in **Table Q4(b)** below. Develop a relevant quality control technique diagram

*Hotel Sentosa menerima aduan daripada pelanggannya seperti **Jadual S4(b)** di bawah. Binakan satu teknik kawalan kualiti yang bersesuaian.*

Table Q4(b) / *Jadual S4(b)*

Complaint Type	No. of Complaint
Delay in registration	43
Room Cleaning	34
Food Quality	17
Delay in Room Service	9
Staff Attitude	6
Room Interiors	6
Air Conditioning	3
Concierge	2
Mini bar	2

[5 marks]
[*5 markah*]

CLO2
C3

(c) Interprete **EIGHT (8)** benefits of implementation ISO 9001 in educational institutions.

*Tafsirkan **LAPAN (8)** kelebihan ISO 9001 dalam institusi pendidikan.*

[8 marks]
[*8 markah*]

CLO2
C4

(d) Analyze the differences between ISO 9001 and ISO 9002.

Analisiskan perbezaan antara ISO 9001 dan ISO 9002.

[5 marks]
[*5 markah*]

SOALAN TAMAT