

**SULIT**



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENDIDIKAN POLITEKNIK  
KEMENTERIAN PENDIDIKAN TINGGI**

**JABATAN KEJURUTERAAN AWAM**

**PEPERIKSAAN AKHIR**

**SESI JUN 2017**

**DCW3162 : INDUSTRIAL STATISTICS**

**TARIKH : 23 OKTOBER 2017**

**MASA : 2.30 PETANG - 4.30 PETANG (2 JAM)**

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Kertas ini mengandungi **DUA BELAS (12)** halaman bercetak.

Bahagian A: Struktur (2 soalan)

Bahagian B: Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula

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**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)** structure questions. Answer **ALL** questions.

**ARAHAN:**

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

**QUESTION 1****SOALAN 1**

CLO 1  
C1

a) Define each of the following terms:

*Berikan definisi bagi istilah –istilah berikut:*

- i. descriptive statistics / *statistik diskriptif*
- ii. inferential statistics / *statistik inferen*
- iii. variable / *pembolehubah*
- iv. population / *populasi*
- v. sample / *sampel*

[5 marks]  
[5 markah]

CLO 1  
C2

- b) Identify FIVE (5) techniques of non-probability sampling.

*Kenal pasti LIMA (5) teknik persampelan bukan kebarangkalian.*[10 marks]  
[10 markah]CLO 1  
C3

- c) The data below are the marks obtained by 30 students in Industrial Statistics Test 2017.

*Data di bawah adalah markah yang diperolehi oleh 30 orang pelajar dalam ujian Industri Statistik 2017.*

62	54	38	33	60	66	56	60	58	52
57	7	85	47	50	71	52	76	49	69
48	68	85	49	79	41	61	65	75	81
64	58	66	59	52	43	65	48	41	56

- i. Construct a stem and leaf plot for the above data.  
*Bina plot batang dan daun bagi data di atas.*
- ii. Construct a frequency distribution table with class size of 10 marks and the first class being 30 - 39.  
*Bina jadual taburan kekerapan dengan saiz kelas 10 markah dan kelas pertama adalah 30 - 39.*

[10 marks]  
[10 markah]

## QUESTION 2

## SOALAN 2

CLO 1  
C2

- a) For the frequency distribution below, find the first quartile and third quartile score of 45 students who sat for the Quantitative Method Test.

*Untuk taburan kekerapan dibawah, tentukan skor kuartil pertama dan ketiga bagi 45 orang pelajar yang menduduki Ujian Kaedah Kuantitatif.*

Table Q2a / Jadual Q2a

Score (x)	40	50	55	60	70
Number of students (f)	10	12	15	5	3

[5 marks]  
[5 markah]CLO 1  
C3

- b) The following data shows the distribution of monthly income obtained from a survey on 120 workers in Senawang Jaya Industrial Area.

*Data berikut menunjukkan agihan pendapatan bulanan yang diperolehi daripada kajian terhadap 120 orang pekerja di Kawasan Perindustrian Senawang Jaya.*

Table Q2b / Jadual Q2b

Income (RM)	Number of workers, f
400 and less than 500	4
500 and less than 600	18
600 and less than 700	25
700 and less than 800	43
800 and less than 900	20
900 and less than 1000	7
1000 and less than 1100	3

Calculate mean, median and mod for the monthly income of the workers.

*Kirakan min, median dan mod bagi pendapatan bulanan pekerja.*

[15 marks]  
[15 markah]

CLO 1  
C1

c) State the rules of probability.

*Nyatakan peraturan-peraturan kebarangkalian.*

[5 marks]  
[5 markah]

## SECTION B : 50 MARKS

## BAHAGIAN B : 50 MARKAH

## INSTRUCTION:

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

## ARAHAN:

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

## QUESTION 1

## SOALAN 1

CLO 1  
C2

a) Differentiate between primary data and secondary data.

*Berikan perbezaan data primer dan data sekunder.*

[10 marks]  
[10 markah]

CLO 1  
C3

b) The human resource manager of SN Group is interested in studying job satisfaction level of their staff. There are 45 staff in Administrative Unit, 35 in Accounts Unit and 80 in the Production Unit. The variables of interest in this study are; job satisfaction level, the number of medical leave in a month and the number of participants in the company's activities. Only 40 staff will be selected as sample.

*Pengurus sumber manusia Kumpulan SN berminat untuk mengkaji tahap kepuasan bekerja bagi kakitangan mereka. Terdapat 45 kakitangan di Unit Pentadbiran, 35 di Unit Akaun dan 80 di Unit Pengeluaran. Pembolehubah dalam kajian ini adalah; tahap kepuasan bekerja, jumlah cuti sakit yang di ambil dalam sebulan dan penglibatan dalam aktiviti syarikat. Hanya 40 kakitangan akan pilih sebagai sampel.*

- i. State the appropriate sampling technique should be used by the researcher.  
*Nyatakan teknik pensampelan yang perlu digunakan oleh penyelidik.*
- ii. Calculate the number of staff should be selected from each unit.  
*Kirakan bilangan kakitangan yang perlu dipilih bagi setiap unit.*
- iii. Choose **ONE (1)** quantitative variable and **ONE (1)** qualitative variable used in this study.  
*Pilih SATU (1) pembolehubah kuantitatif dan SATU (1) pembolehubah kualitatif yang digunakan dalam kajian ini.*
- iv. **TWENTY (20)** staff from the Production Unit is selected using systematic sampling technique. Interpret this method.  
*DUA PULUH (20) orang kakitangan dari Unit Pengeluaran dipilih menggunakan teknik persampelan sistematik. Terangkan kaedah ini.*

[15 marks]  
[15 markah]

**QUESTION 2**  
**SOALAN 2**

CLO 1  
C2

- a) Qualitative data can be classified into categories or classes. They can be presented in a form of pie chart and bar chart. Describe bar charts.

*Data kualitatif boleh diklasifikasikan kepada kategori atau kelas. Ianya dapat dipersembahkan dalam bentuk carta pai dan carta palang. Huraikan carta palang.*

[10 marks]  
[10 markah]

CLO 1  
C3

- b) The following data shows the age of patients receiving treatment at Dr. Soo Clinic.

*Data berikut menunjukkan umur pesakit yang mendapatkan rawatan di Klinik Dr. Soo.*

**Table Q2b / Jadual Q2b**

22	28	14	24	25
33	23	22	13	30
40	24	13	31	23
34	27	28	24	35
14	30	17	20	30
19	25	26	36	11
38	25	25	32	29
34	16	17	35	28
37	10	20	19	13
30	19	21	36	29

From the Table Q2b,

*Daripada jadual Q2b,*

- i. calculate the number of classes, data range and class width for the above data.

*kirakan bilangan kelas, julat data dan lebar kelas bagi data di atas.*

- ii. schedule the above data in frequency distribution table with tally, frequency, midpoint, class boundaries and relative frequency.

*jadualkan data di atas kepada jadual taburan kekerapan dengan gundalan, kekerapan, titik tengah, sempadan kelas dan kekerapan relatif.*

- iii. draw a histogram.

*lukiskan histogram.*

[15 marks]  
[15 markah]

QUESTION 3

SOALAN 3

CLO 1  
C2

- a) Table Q3a shows reading habits of third semester students from Civil Engineering class, Suria College.

*Jadual Q3a menunjukkan tabiat membaca pelajar semester tiga dari kelas Kejuruteraan Awam, Kolej Suria.*

Table Q3a / Jadual Q3a

Number of books	Frequency
2	4
3	5
4	7
5	3
6	2

Determine the mean, mode and median.

*Tentukan mean, mod dan median.*

[10 marks]  
[10 markah]

CLO 1  
C3

- b) Table Q3b shows the Mathematics test results of 5 students in semester 1 and semester 2.

*Jadual Q3b menunjukkan keputusan ujian Matematik 5 orang pelajar pada semester 1 dan semester 2.*

Table Q3b / *Jadual Q3b*

Name	Mathematics Test Sem. 1	Mathematics Test Sem. 2
Ahmad	72	88
Rohana	50	62
Nurul	90	64
Kamal	70	88
Salina	68	68

From the table above calculate the;

*Dari jadual di atas kirakan;*

- i. test range for semester 1 and semester 2.  
*julat ujian untuk semester 1 and semester 2.*

[5 marks]  
[5 markah]

- ii. variance of Mathematics test semester 1 and semester 2.  
*varians ujian Matematik semester 1 dan semester 2.*

[10 marks]  
[10 markah]

QUESTION 4  
SOALAN 4CLO 1  
C2

- a) Two dice are rolled. Identify the probability that the sum is;  
*Dua dadu dilambung. Kenalpasti kebarangkalian jumlah adalah;*

- i. equal to 1.  
*bersamaan dengan 1.*
- ii. equal to 4.  
*bersamaan dengan 4.*
- iii. less than 13.  
*kurang daripada 13.*

[10 marks]  
[10 markah]

CLO 1  
C3

- b) There are three events A, B and C. Interpret P(A), P(B) and P(C) if;  
*Terdapat tiga peristiwa A, B dan C. Jelaskan P(A), P(B) and P(C) jika;*

event A and C are independent / *Peristiwa A dan C saling bebas,*  
event B and C are independent / *Peristiwa B dan C saling bebas,*  
event A and B are disjoint / *Peristiwa A dan B tidak berkaitan,,*  
 $P(A \cup C) = 2/3, P(B \cup C) = 3/4, P(A \cup B \cup C) = 11/12$

[15 marks]  
[15 markah]

SOALAN TAMAT

## FORMULA

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i.  $K = 1 + \log_{10}(n)$

ii.  $\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$

iii.  $\bar{x} = L_m + \left[ \frac{\frac{n}{2} - \sum f f_{m-1}}{f_m} \right] \times c$

iv.  $\bar{x} = L_m \left( \frac{\Delta_1}{\Delta_1 + \Delta_2} \right) \times c$

v.  $\bar{x} = \frac{n+1}{4}$

vi.  $\bar{x} = L_1 + \left[ \frac{\frac{n}{4} - \sum f b_{q-1}}{f_1} \right] \times c$

vii.  $D_k = L_m + \left[ \frac{k \frac{n}{10} - \sum f_{BD1}}{f_{D1}} \right] \times c$

viii.  $P_k = L_{BK} + \left[ \frac{k \frac{n}{100} - \sum f_{BK1}}{f_{BK1}} \right] \times c$

ix.  $s^2 = \frac{1}{n-1} \sum [x - \bar{x}]^2$

x.  $s^2 = \frac{1}{\sum f - 1} \left[ \sum f x^2 - \frac{(\sum f x)^2}{\sum f} \right]$

xi.  $s = \sqrt{s^2}$

xii. mean deviation =  $\frac{\sum |x - \text{mean}|}{n}$  ,  $\frac{1}{\sum f} [\sum f |x - \bar{x}|]$