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

JABATAN KEJURUTERAAN AWAM

PENILAIAN ALTERNATIF

SESI 1: 2021/2022

DCW30112 : INDUSTRIAL STATISTICS

NAMA PENYELARAS KURSUS : WAHIDA BINTI MOHAMAD NOOR

KAEDAH PENILAIAN   : PEPERIKSAAN ONLINE

JENIS PENILAIAN   : SOALAN BERSTRUKTUR (2 SOALAN)
                                SOALAN ESE1 (1 SOALAN)

TARIKH PENILAIAN   : 26 JANUARI 2022

TEMPOH PENILAIAN   : 1 JAM 30 MINIT

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 struktur. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO1
C3

(a)   Probability sampling techniques are used when a researcher plans to make inferences about the population of interest. One of the probability sampling techniques is a systematic random sampling. Explain the steps in achieving a systematic random sample.

Teknik pensampelan kebarangkalian digunakan apabila penyelidik bercadang untuk membuat kesimpulan mengenai populasi yang berminat. Salah satu teknik pensampelan kebarangkalian ialah pensampelan sistematik. Terangkan langkah-langkah dalam mencapai sampel rawak sistematik.

[5 marks]
[*5 markah*]

CLO1
C3

(b)   The houses in a street are numbered from 1 to 340. Construct a systematic sample of size 20.

Satu deretan rumah dinomborkan dari 1 hingga 340. Bina persampelan sistematik dengan saiz sampel adalah 20.

17				85					

CLO1
C3

[10 marks]
[*10 markah*]

CLO1
C3

(c)   There are several methods of collecting data and each have its own advantages and disadvantages. Explain **FIVE (5)** common methods of data collection.
*Terdapat beberapa kaedah mengumpulkan data dan masing-masing mempunyai kelebihan tersendiri dan kekurangan. Terangkan **LIMA (5)** kaedah umum pengumpulan data.*

[10 marks]

[10 markah]

QUESTION 2
SOALAN 2

CLO1
C3

(a)   A study was conducted to obtain a growth rate of cultured fish in ponds. **Table A2(i)** shows the mass (in gram) of 30 fishes after three months in the pond. Develop a frequency distribution table with **SIX (6)** classes for the data.
*Satu kajian dilakukan untuk mendapatkan kadar pertumbuhan ikan ternakan di sebuah kolam. **Jadual A2(i)** menunjukkan jisim (dalam gram) 30 ikan ternakan setelah 3 bulan. Bangunkan Jadual Taburan Kekerapan dengan ENAM (6) kelas untuk data tersebut.*

Table A2(i) : Growth rate of cultured fish in ponds

Jadual A2(i): Kadar pertumbuhan ikan ternakan di kolam

25	50	43	33	20	61
28	46	20	40	30	22
45	66	35	22	57	75
55	25	57	25	70	59
65	20	38	30	28	23

[5 marks]

[5 *markah*]

CLO1
C3

(b)   Table 1(b) shows Mr. Jefri's monthly expenses on various items. Illustrate the data using a pie chart that shows the percentage of each expense.

Jadual B2(b) *menunjukkan perbelanjaan bulanan Encik Jefri untuk pelbagai barang. Gambarkan data menggunakan carta pai dengan menunjukkan nilai peratusan setiap perbelanjaan.*

Table 2(b): Mr. Jefri's monthly expenses
Jadual 2(b): Perbelanjaan bulanan En Jefri

Item	Rent	Food	Clothing	Education	Savings
Expenditure (RM)	4000	5400	2800	1800	400

[10 marks]
[*10 markah*]

(c)   Show the data with a stem-and-leaf plot.

Tunjukkan data dalam bentuk "stem-and-leaf plot"

50   40   41   17   11   7   22   44   28   21   30   62
29   34   59   6   39   30   54   39   31   53   44   64

[10 marks]
[10 *markah*]

SECTION B : 25 MARKS
BAHAGIAN A : 25 MARKAH

INSTRUCTION:
This section consists of **ONE (1)** essay question. Answer the question.
ARAHAN:
*Bahagian ini mengandungi **SATU (1)** soalan esei. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO1
C3

(a)   A sample of 10 students in DBK showed the following credit hours taken during
       the second year of their programme. Calculate the range, mean, median and
       mode.

       10 sampel pelajar DBK menunjukkan jam kredit yang telah diambil oleh mereka
       semasa berada di tahun kedua program. Kirakan julat, purata, median dan
       mod.

                          24, 18, 21, 22, 19, 20, 18, 21, 18, 17

                                                                    [10 marks]
                                                                    [10 *markah*]

CLO1
C3

(b)   **Table B3(a)** shows the age distribution of 170 listeners of rock music
       surveyed by a market researcher. Calculate the mean, variance and standard
       deviation for the data.

       *Jadual **B3(a)** menunjukkan taburan umur pendengar muzik rock seperti yang*
       telah dikaji oleh seorang pengkaji pasaran. Kirakan purata, varian dan
       sisihan piawai bagi data tersebut.

Table B3(a): Age distribution of listeners of jazz music

Jadual **B3(a)***: Taburan umur pendengar muzik jazz*

Age (years)	Number of listeners
15 - 19	9
20 - 24	16
25 - 29	27
30 – 34	44
35 – 39	42
40 - 44	23
45 - 49	7
50 - 54	2

[15 marks]

[15 markah]

SOALAN TAMAT

DCW 30112 Industrial Statistics Formulae

1. $K = \dfrac{\log n}{\log 2}$

2. $mean\ (x) = \dfrac{\sum x}{N}$ ungroup data

3. $mean\ (x) = \dfrac{(\sum fx)}{\sum f}$ group data

4. $mode = L_b + \left(\dfrac{d_1}{d_1 + d_2}\right)$ group data

5. $median = L_b + \left[\dfrac{\frac{n}{2} - Cfb}{fm}\right] \times c.i$

6. $Q_1 = L_B + \left[\dfrac{\frac{n}{4} - Cfb}{f_{Q1}}\right] \times c.i$

7. $Q_3 = L_B + \left[\dfrac{\frac{3n}{4} - Cfb}{f_{Q1}}\right] \times c.i$

8. $Quartile\ range = Q_3 - Q_1$
9. $Quartile\ deviation = \dfrac{1}{2}(Q_3 - Q_1)$

10. $D_k = L_b + \left[\dfrac{\frac{kn}{10} - Cfb}{f_{D_k}}\right] \times c.i$

11. $P_k = L_b + \left[\dfrac{\frac{kn}{100} - Cfb}{f_{P_k}}\right] \times c.i$

12. Sample ungrouped data

$s^2 = \dfrac{1}{n-1}\sum\left(x^2 - \dfrac{(\sum x)^2}{n}\right)$

$S = \sqrt{\dfrac{1}{n-1}\sum\left(x2 - \dfrac{(\sum x)^2}{n}\right)}$

13. Sample grouped data

$$s^2 = \frac{1}{n-1}\sum\left[fx_m{}^2 - \frac{(\sum fx_m)^2}{n}\right]$$

$$s = \sqrt{\frac{1}{n-1}\sum\left(fx_m{}^2 - \frac{(\sum fx_m)^2}{n}\right)}$$

14. Mean deviation = $\dfrac{\sum[x - mean]}{n}$ ungroup data