

SULIT



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

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI II : 2021 / 2022

DPB30063: STATISTICS

TARIKH : 27 JUN 2022

MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)

Kertas ini mengandungi **LAPAN (8)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula, Table

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:

This section consists of **FOUR (4)** structured questions. Answers **ALL** questions.

ARAHAN:

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

QUESTION 1**SOALAN 1**CLO1
C1

- (a) State whether the following variables are QUALITATIVE or QUANTITATIVE.

Nyatakan sama ada pembolehubah berikut adalah KUALITATIF ataupun KUANTITATIF.

- (i) Current world population.
Populasi dunia semasa.
- (ii) AirAsia's net profit for year 2021.
Keuntungan bersih AirAsia pada tahun 2021.
- (iii) Time taken to boil an egg.
Masa yang diambil untuk merebus telur.
- (iv) Ingredients to make a banana cake.
Bahan-bahan untuk membuat kek pisang.
- (v) The most famous hotel in Malaysia.
Hotel yang paling terkenal di Malaysia.

[5 marks]
[5 markah]

- (b) The following table shows the marks scored by DPM3A students in a Statistics test.

Jadual berikut menunjukkan markah yang diperolehi oleh pelajar DPM3A dalam ujian Statistik.

Class <i>Kelas</i>	Frequency <i>Kekerapan</i>	Class boundaries <i>Sempadan kelas</i>	Cumulative frequency <i>Kekerapan Longgokan</i>	Relative Frequency <i>Kekerapan Relatif</i>
$a - 74$	7	69.5 – 74.5	7	i
75 – 79	9	74.5 – 79.5	g	0.2
80 – 84	10	$e - 84.5$	26	0.22
85 – 89	c	84.5 – 89.5	34	0.18
90 – b	6	89.5 – 94.5	40	0.13
95 – 99	5	94.5 – f	h	0.11
TOTAL	d			j

CLO2
C2

- (i) Fill the value $a, b, c, d, e, f, g, h, i$ and j .
Isikan nilai $a, b, c, d, e, f, g, h, i$ and j .

[10 marks]
[10 markah]

CLO2
C3

- (ii) Construct a histogram and frequency polygon.
Bina histogram dan poligon kekerapan.

[10 marks]
[10 markah]

QUESTION 2**SOALAN 2**

- (a) The following table shows number of visitors from Asia to Sabah from January to December 2019.

Jadual berikut menunjukkan bilangan pelawat dari Asia ke Sabah dari Januari hingga Disember 2019.

Month <i>Bulan</i>	Number of visitors ('000) <i>Bilangan pelawat</i>
January	92
February	86
March	87
April	85
May	82
June	85
July	71
August	75
September	70
October	90
November	95
December	99

CLO2
C2

Based on the above data, you are required to report;

Berdasarkan jadual di atas, anda dikehendaki untuk melaporkan;

- (i) mean
min

[4 marks]
[4 markah]

- (ii) mode
mod

[2 marks]
[2 markah]

- (iii) median
median

[6 marks]
[6 markah]

CLO2
C3

- (b) The scores obtained by 50 students sitting for Statistics test are given below.
Skor yang diperolehi oleh 50 orang pelajar dalam ujian Statistik adalah seperti di bawah.

Scores <i>Skor</i>	Number of students <i>Bilangan pelajar</i>
40 – 49	5
50 – 59	10
60 – 69	12
70 – 79	11
80 – 89	8
90 – 99	4

Based on the above data, calculate;

Berdasarkan data di atas, kirakan;

- (i) range
julat

[2 marks]
[2 markah]

- (ii) mean deviation
sisihan min

[5 marks]
[5 markah]

- (iii) standard deviation
sisihan piawai

[6 marks]
[6 markah]

QUESTION 3**SOALAN 3**CLO2
C2(a) If $S = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$,

$$X = \{0, 2, 4, 6\},$$

$$Y = \{1, 3, 5, 7, 9\} \text{ and}$$

$$Z = \{2, 3, 4, 5\},$$

Detail the;

Perincikan;(i) elements of Y' *elemen Y'*

[3 marks]

[3 markah]

(ii) $P(Z)$

[2 marks]

[2 markah]

CLO2
C3

(b) (i) Probability of Student X will fail a certain subject is 0.2 while Y's is 0.5. The probability that both X and Y will fail the subject is 0.06.

Compute the probability that at least one of these two students will fail the subject.

*Kebarangkalian Pelajar X gagal suatu subjek ialah 0.2 sementara Pelajar**Y pula 0.5. Kebarangkalian kedua-dua Pelajar tersebut gagal ialah 0.06.**Kirakan kebarangkalian sekurang-kurangnya salah seorang dari mereka akan gagal subjek tersebut.*

[10 marks]

[10 markah]

CLO2
C3

- (ii) Commerce Department has 38% Year 1 students, 30% Year 2 students and 32% Year 3 students. 3%, 5% and 8% of the Year 1, 2 and 3 students respectively are Malays. A student is selected at random.

Draw a tree diagram to determine the probability that a Year 2 student is not a Malay.

Jabatan Perdagangan mempunyai 38% pelajar Tahun 1, 30% pelajar Tahun 2 dan 32% pelajar Tahun 3. 3%, 5% and 8% pelajar Tahun 1,2 dan 3 adalah pelajar melayu. Seorang pelajar dipilih secara rawak.

Lukis gambarajah pokok yang menunjukkan kebarangkalian seorang pelajar ialah bukan Melayu.

[10 marks]

[10 markah]

QUESTION 4**SOALAN 4**CLO2
C2

- (a) Approximate Spearman's rank coefficient of correlation for the following data.
Anggarkan pekali korelasi Spearman untuk data berikut.

Student <i>Pelajar</i>	Class Rank (x) <i>Kedudukan dalam kelas</i>	Science Score (y) <i>Skor Sains</i>
A	1	80
B	2	60
C	3	70
D	4	100
E	5	95
F	6	85
G	7	75

[12 marks]
[12 markah]CLO2
C3

- (b) It is claimed that the average tire on the market is designed to last about 60,000 miles and standard deviation of 4,500 miles. A change in the production process is believed to result in a better product. A test sample of 65 new tires has a mean life of 61,000 miles. Examine that the new product is significantly better than the current one? Use a 0.05 level of significance to justify your answer.
Didakwa bahawa secara purata tayar yang ada di pasaran direka untuk bertahan sehingga 60,000 batu dan sisihan piawai 4,000 batu. Perubahan dalam proses pengeluaran dipercayai akan menghasilkan produk yang lebih baik. Sampel ujian terhadap 64 tayar baharu mendapati ia mempunyai purata jangka hayat 61,000 batu. Tentukan produk baharu itu lebih baik daripada produk semasa? Gunakan darjah signifikan 0.05 untuk justifikasi jawapan anda.

[13 marks]
[13 markah]**SOALAN TAMAT**

FORMULA STATISTICS

$$k = 1 + 3.3 \log_{10} n$$

$R = \text{Highest value} - \text{Lowest value}$

$$c = \frac{\text{Range}}{k}$$

$$\bar{x} = \frac{\sum fx}{\sum f}$$

$$\tilde{x} = Lm + \left[\frac{\frac{\sum f}{2} - \sum fm^{-1}}{fm} \right] x C$$

$$\hat{x} = Lb + \left[\frac{f_0 - f_1}{(f_0 - f_1) + (f_0 - f_2)} \right] x C$$

$$\hat{x} = \bar{x} - 3(\bar{x} - \tilde{x})$$

$$MD = \frac{1}{\sum f} \left[\sum f (x - \bar{x}) \right]$$

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

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

$$cv = \frac{s}{\bar{x}} \times 100$$

$$PCS 1 = \frac{\bar{x} - \hat{x}}{s}$$

$$PCS 2 = \frac{3(\bar{x} - \tilde{x})}{s}$$

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

$$p = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

$$b = \frac{n \sum xy - (\sum x)(\sum y)}{n \sum x^2 - (\sum x)^2}$$

$$a = \frac{\sum y}{n} - b \frac{\sum x}{n}$$

$$y = a + bx$$

$$P(A) = \frac{n(A)}{n(S)}$$

$$P(A \cup B) = P(A) + P(B)$$

$$P(A \cap B) = P(A) + P(B) - P(A \cup B)$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$\bar{x} \pm Z \frac{\alpha}{2} \left(\frac{\sigma}{\sqrt{n}} \right)$$

$$\bar{x} \pm t \frac{\alpha}{2} \left(\frac{s}{\sqrt{n}} \right)$$

$$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$$

t Table

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
Z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

T-2 Tables

Table entry for z is the area under the standard Normal curve to the left of z .

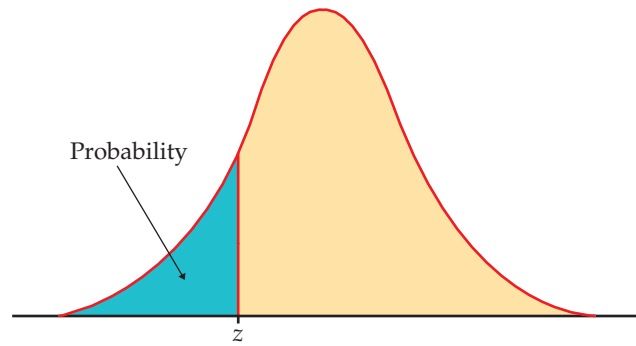


TABLE A

Standard Normal probabilities

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
-1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
-1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
-0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
-0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

