SULIT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

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

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI I : 2025/2026

DPB30063: STATISTICS

TARIKH : 26 NOVEMBER 2025
MASA : 11.30 PAGI – 1.30 PETANG (2 JAM)

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

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula dan Kertas Graf

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

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

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

QUESTION 1

SOALAN 1

CLO1 (a) Categorize whether the following variables are **QUALITATIVE** or **QUANTITATIVE**.

Kategorikan sama ada pembolehubah berikut adalah **KUALITATIF** atau **KUANTITATIF**.

(i) Customer age in a survey
Umur pelanggan dalam tinjauan

(ii) Product color in a market survey
Warna produk dalam tinjauan pasaran

(iii) Temperature of water in a science experiment
Suhu air dalam eksperimen sains

(iv) Employee job satisfaction level
Tahap kepuasan kerja pekerja

(v) Type of cuisine preferred by customers
Jenis masakan pilihan pelanggan

[5 marks]
[5 markah]

CLO2 (b) Table 1(a) represents the expenses per week (RM) of 36 students at ABC College.

Jadual 1(a) menunjukkan perbelanjaan per minggu (RM) bagi 36 pelajar Kolej ABC.

Table 1(a) / *Jadual 1(a)*

77	55	60	56	50	53	50	64	62
56	55	68	70	77	63	67	62	60
50	65	47	62	79	73	57	70	58
60	75	64	50	73	56	45	78	65

Based on the above data, you are required to construct a frequency distribution table consisting of class interval, frequency, midpoint and class boundaries.

Berdasarkan data di atas, anda dikehendaki untuk membina jadual taburan kekerapan yang mengandungi selang kelas, kekerapan, titik tengah dan sempadan kelas.

[10 marks]
[10 markah]

CLO2 (c) From the table above, draw a histogram graph and frequency polygon to illustrate data.

Daripada jadual di atas, lukis graf histogram dan poligon kekerapan untuk menggambarkan data.

[10 marks]
*[*10 *markah]*

QUESTION 2

SOALAN 2

CLO2 (a) Table 2(a) shows the distribution of height (cm) of 100 PSA students.

Jadual 2(a) menunjukkan taburan ketinggian (cm) bagi 100 orang pelajar PSA.

Table 2(a)/ *Jadual 2(a)*

Height (cm) *Ketinggian (cm)*	Number of students *(Bilangan pelajar)*
149 - 155	5
156 - 162	20
163 - 169	42
170 -176	26
177 - 183	7

Based on the above data, detail the calculation for mean, mode and median.
Berdasarkan data di atas, perincikan pengiraan min, mod dan median.

[12 marks]
[12 markah]

CLO2 (b) By using the data in Table 2(a), ascertain the skewness by using the Pearson's Coefficient of Skewness 2.

Dengan menggunakan data di Jadual 2(a), kenalpasti kepencongan dengan menggunakan Pekali Kepencongan Pearson 2.

[13 marks]
[13 markah]

QUESTION 3
SOALAN 3

CLO2 (a) In a primary school of 500 students, it is found that 210 like the color green, 258 like the color yellow, 216 like the color blue, 122 like the colors green and yellow, 83 like the colors blue and yellow, 97 like the colors green and blue and 52 like all three colors. Convert this information into a Venn diagram.

Di dalam sebuah sekolah rendah yang mempunyai 500 orang pelajar, didapati bahawa 210 pelajar menyukai warna hijau, 258 pelajar menyukai warna kuning, 216 pelajar menyukai warna biru, 122 pelajar menyukai warna hijau dan kuning, 83 pelajar menyukai warna biru dan kuning, 97 pelajar menyukai warna hijau dan biru, dan 52 orang menyukai ketiga-tiga warna. Tukarkan maklumat ini ke dalam gambarajah Venn.

[5 marks]
[5 markah]

CLO2 (b) (i) There are 15 books on a bookshelf. There are 10 books of fiction, 4 of which are hardcover. There are 6 hardcover books on the shelf, the other 9 are all softcover. One book is selected at random from the shelf. Based on the above data, you are required to prepare a two-way table.

Terdapat 15 buah buku di atas rak buku. 10 buah buku fiksyen, di mana 4 antaranya adalah berkulit keras. Terdapat 6 buah buku berkulit keras di atas rak buku, 9 lagi adalah berkulit lembut. Sebuah buku dipilih secara rawak daripada rak. Berdasarkan data di atas, anda dikehendaki menyediakan jadual dua hala.

[10 marks]
[10 markah]

CLO2

(ii) A water bottling factory has two machines. Machine X produces 75% of the bottles and Machine Y produces 25%. One out of every 20 bottles produced by Machine X is rejected for some reason, while one out of every 30 bottles from Machine Y is rejected. Based on the data, construct a tree diagram.

Sebuah kilang pembotolan air mempunyai 2 mesin. Mesin X mengeluarkan 75% botol and Mesin Y mengeluarkan 25% botol. Satu daripada setiap 20 botol yang dikeluarkan Mesin X adalah ditolak atas alasan tertentu, sementara satu daripada 30 botol daripada Mesin Y adalah ditolak.Berdasarkan data tersebut, bina gambarajah pokok.

[10 marks]
[10 markah]

QUESTION 4

SOALAN 4

CLO2 (a) A coconut shake seller at a respective tourism centre had recorded his sales (in RM'00) for 10 consecutive days in September 2024 and daily maximum temperatures (^oC). The data are shown in Table 4(a) below:

Penjual kelapa goncang pada suatu pusat pelancongan telah merekodkan jualan (dalam RM'00) untuk tempoh 10 hari berturut-turut dalam bulan September 2024 dan suhu maksima harian (^oC). Data tersebut ditunjukkan dalam Jadual 4(a) di bawah:

Table 4(a)/ *Jadual 4(a)*

Sales (RM'00) *Jualan (RM'00)*	Temperature (^oC) *Suhu (^oC)*
50	24
79	18
89	19
61	23
52	21
83	20
59	22
66	21
57	25
85	18

Based on the above data, simplify the linear regression equation by using the least squares method.

Berdasarkan data di atas, permudahkan persamaan garis lurus dengan menggunakan kaedah kuasa dua terkecil.

[12 marks]
[12 markah]

CLO2 (b) The daily wages of the factory workers are assumed to be normally distributed with a mean of RM52 and a variance of RM25. A random sample of 50 workers gives the total daily wages equal to RM2,550. Is there enough evidence to support the claim that the average daily wages of the workers are different from RM52? Provide a hypothesis test at a 1% level of significance.

Upah harian pekerja kilang diandaikan bertaburan normal dengan min RM52 dan varians RM25. Satu sampel rawak 50 pekerja memberikan jumlah upah harian bersamaan RM2,550. Adakah terdapat bukti yang mencukupi untuk menyokong dakwaan bahawa purata upah harian pekerja adalah berbeza daripada RM52? Sediakan ujian hipotesis pada tahap signifikan sebanyak 1%.

[13 marks]
[13 markah]

SOALAN TAMAT

FORMULA STATISTICS

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

$$R = Highest\ value - Lowest\ value$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$y = a + bx$$

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

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

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

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

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

$$\overline{x} \pm Z_{\alpha/2}\frac{\alpha}{\sqrt{n}}$$

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

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

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										

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

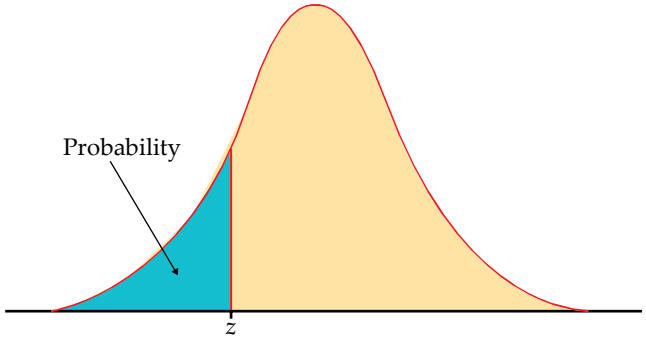

TABLE A

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

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

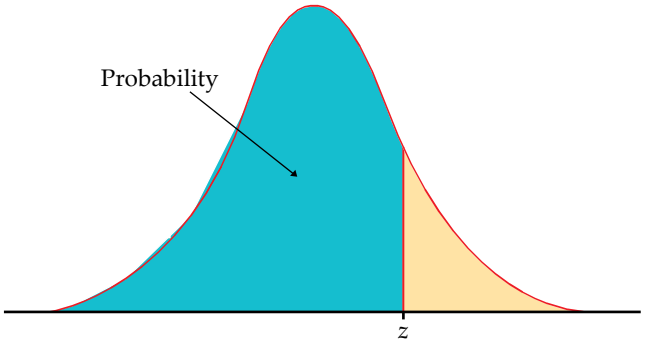

TABLE A

Standard normal probabilities (continued)

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998