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 II : 2024/2025

DPB30063 : STATISTICS

TARIKH : 20 MEI 2025
MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)

Kertas ini mengandungi **ENAM (6)** 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)

SULIT

STRUCTURE: 100 MARKS
STRUKTUR: 100 MARKS

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) Outline **FIVE (5)** sources of primary data in order to obtain required data from the respondents

*Nyatakan **LIMA (5)** sumber data primer bagi mendapatkan data daripada responden*

[5 marks]
[5 *markah*]

CLO2 b) The table shows the number of customers at Bestaa Cafe in 30 days.
Jadual menunjukkan bilangan pelanggan di Kafe Bestaa selama 30 hari.

20	22	40	32	40	49	20	16	14	20
27	16	19	35	15	15	21	22	20	15
24	25	22	18	20	24	16	25	18	32

Construct frequency distribution table consisting of class interval, frequency, midpoint and class boundaries.
Bina jadual taburan kekerapan yang mengandungi selang kelas, kekerapan, titik tengah dan sempadan kelas.

[10 marks]
[*10 markah*]

CLO2 c) From the table above, draw 'less than' ogive.
Daripada jadual di atas, lukis 'kurang daripada" ogif.

[10 marks]
[*10 markah*]

QUESTION 2
SOALAN 2

The frequency distribution below shows the age of paddy field workers in Kg. Hujung Tanjung, Perlis

Taburan kekerapan di bawah menunjukkan umur pekerja sawah di Kg Hujung Tanjung, Perlis

Age *Umur*	Number of workers *Bilangan pekerja*
31-40	5
41-50	4
51-60	10
61-70	13
71-80	5
81-90	3

CLO2 a) From the table, simplify the calculation for mean and mode.
Daripada jadual, permudahkan kiraan min dan mod.

[12 marks]
[*12 markah*]

CLO2 b) From the data in (2a), calculate Pearson's Coefficient of Skewness 1 (PCS 1) and ascertain the form of skewness.

Daripada data (2a), Kira Pearson's Coefficient of Skewness 1 (PCS 1) dan tentukan bentuk kecondongan.

[13 marks]
[*13 markah*]

QUESTION 3
SOALAN 3

CLO2 a) A bag contains 4 blue marbles and 7 red marbles. Chong randomly picks a marble from the bag and replaces it in the bag. He mixes the marbles in the bag and then picks another marble at random from the bag. Express the value of probability that Chong picks a blue marble in his second draw.

Sebuah beg mengandungi 4 guli biru dan 7 guli merah. Chong mengambil guli secara rawak dari beg dan menggantikannya di dalam beg. Dia mencampurkan guli di dalam beg dan kemudian mengambil guli lain secara rawak daripada beg itu. Nyatakan nilai kebarangkalian bahawa Chong mengambil guli biru dalam cabutan keduanya.

[5 marks]
[*5 markah*]

CLO2 b) 30 students were asked which musical instruments they play in the music class. The following are the data from the survey.
30 orang pelajar ditanya berkenaan alat muzik yang dimainkan didalam kelas muzik. Berikut merupakan data berkenaan tinjauan tersebut.

- 7 play all three
  7 bermain ketiga-tiganya
- 20 play piano (P) in total
  20 bermain piano (P) secara keseluruhan
- 18 play guitar (G) in total
  18 bermain gitar (P) secara keseluruhan
- 15 play drum (D) in total
  15 bermain dram (D) secara keseluruhan
- 10 play piano and drum
  10 bermain piano dan dram
- 11 play piano and guitar
  11 bermain piano gitar
- 9 play guitar and drum
  9 bermain gitar dan dram

i) Based on the data above, draw a Venn diagram.
Berdasarkan data di atas, lukis gambarajah Venn.

[10 marks]
[*10 markah*]

ii) Refer to the above data in b (i), calculate:
Merujuk kepada data di atas, kira:

a. The number of students who play 1 instrument only.
Bilangan pelajar yang bermain hanya 1 alat sahaja.

b. The probability of students who play all musical instruments.
Kebarangkalian pelajar bermain semua alat muzik.

c. P (G')
P (G')

d. P (G ∩ D)
P (G ∩ D)

e. P (D ∩ P)
P (D ∩ P)

[10 marks]
[*10 markah*]

QUESTION 4
SOALAN 4

The following table shows the weight and height obtained by 10 students (AA, BB, CC, DD, EE, FF, GG, HH, II and JJ) in Politeknik Banting
Jadual berikut menunjukkan berat dan tinggi yang diperolehi dari 10 (AA, BB, CC, DD, EE, FF, GG, HH, II dan JJ) orang pelajar Politeknik Banting.

	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ
Weight (Kg) *Berat (Kg)*	60	62	63	65	61	68	69	70	72	74
Height (Cm) *Tinggi(Cm)*	155	165	155	150	170	145	175	170	185	190

CLO2

a) Based on the above data, simplify the linear regression equation by using Least Square Method.
Berdasarkan data di atas, permudahkan persamaan regresi linear dengan menggunakan Kaedah Kuasa Dua Terkecil.

[12 marks]
[*12 markah*]

CLO2

b) A test has been given to all students who desire to enter polytechnic. It is known that the test scores are normally distributed with a mean 500 and standard deviation 100. It is suspected that the average of the test scores is different from 500. A randomly selected sample of 64 freshmen shows a mean of 520 with level of significant of 0.01. Is there sufficient evidence to support the claim that the average test scores are different from 500? Prepare your answer.

Ujian telah diberikan kepada semua pelajar yang ingin memasuki politeknik. Adalah diketahui bahawa markah ujian adalah taburan normal dengan min 500 dan sisihan piawai 100. Adalah disyaki bahawa purata markah ujian berbeza daripada 500 . Sampel yang dipilih secara rawak daripada 64 pelajar baru menunjukkan min 520 dengan tahap signifikan 0.01. Adakah terdapat bukti yang mencukupi untuk menyokong dakwaan bahawa purata markah ujian adalah berbeza daripada 500?. Sediakan jawapan anda.

[13 marks]
[*13 markah*]

SOALAN TAMAT

FORMULA STATISTICS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$y = a + bx$$

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

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

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

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

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

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

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

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

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

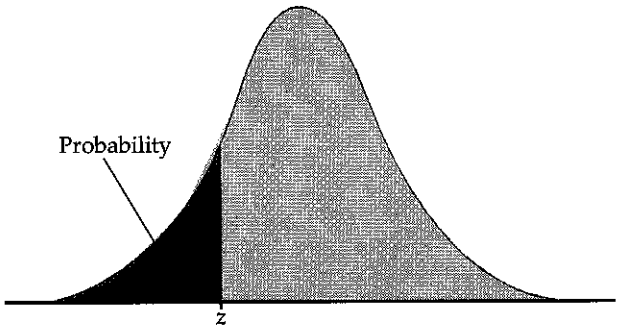

Table entry for z is the area under the standard normal curve to the left of z.

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

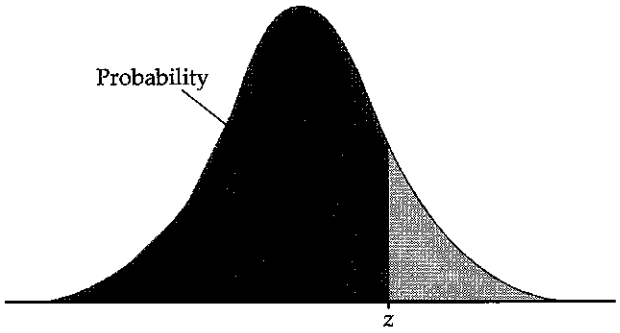

Table entry for z is the area under the standard normal curve to the left of z.

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