

**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**

**DPA10253 : STATISTICS**

**TARIKH : 22 NOVEMBER 2025  
MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)**

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Kertas ini mengandungi **SEBELAS (11)** halaman bercetak.  
Subjektif (4 soalan)

Dokumen sokongan yang disertakan :

1. Formula Statistics
2. Standard Normal Probabilities Table
3. t-Table

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

**SULIT**

**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**

- CLO1 (a) List **FIVE (5)** roles of statistics in daily life. [5 marks]
- CLO1 (b) Explain the definition and **ONE (1)** example of:
- i. Population
  - ii. Sample
- [5 marks]
- CLO1 (c) Sen Heng Store tracks the prices of three (3) different brands of hair dryer (Sharp, LG and Toshiba) for over two (2) years. The prices are as follows:

Brand	Price In 2022 (Base Year)	Price In 2023 (Current Year)
Sharp	RM 90	RM 95
LG	RM 76	RM 80
Toshiba	RM 80	RM 88

Table 1

Using the simple index number formula, calculate the price index for each item, then calculate overall price index for 2023, by considering 2022 as the base year. Show all steps clearly and explain the results obtained.

[15 marks]

**SOALAN 1**

CLO1

(a) Senaraikan LIMA (5) peranan statistik dalam kehidupan seharian.

[5 markah]

CLO1

(b) Terangkan definisi dan SATU (1) contoh bagi:

i. Populasi

ii. Sampel

[5 markah]

CLO1

(c) Kedai Sen Heng mengesan harga tiga (3) jenama pengering rambut yang berbeza (Sharp, LG dan Toshiba) selama lebih dua (2) tahun. Harga adalah seperti berikut:

<i>Jenama</i>	<i>Harga pada tahun 2022 (Tahun Asas)</i>	<i>Harga pada tahun 2023 (Tahun Semasa)</i>
<i>Sharp</i>	<i>RM 90</i>	<i>RM 95</i>
<i>LG</i>	<i>RM 76</i>	<i>RM 80</i>
<i>Toshiba</i>	<i>RM 80</i>	<i>RM 88</i>

*Jadual 1*

Menggunakan formula nombor indeks mudah, hitung indeks harga untuk setiap item, kemudian kira indeks harga keseluruhan untuk tahun 2023, dengan merujuk tahun 2022 sebagai tahun asas. Tunjukkan semua langkah dengan jelas dan terangkan keputusan yang diperolehi.

[15 markah]

**QUESTION 2**

- CLO1 (a) The frequency distribution below shows the monthly amount invested by employees in Maju company under company's profit-sharing plan.

Monthly Sales (RM)	Number of Employees
30 – 34	3
35 – 39	7
40 – 44	11
45 – 49	22
50 – 54	40
55 – 59	34
60 – 64	9
65 - 69	4

Table 2

From the table above, calculate mean, median and mode.

[20 marks]

- CLO1 (b) Determine the skewness from the answer in 2(a) with suitable diagram.

[5 marks]

**SOALAN 2**

CLO1

- (a) Taburan kekerapan di bawah menunjukkan jumlah bulanan yang dilaburkan oleh pekerja di sebuah Syarikat Maju di bawah pelan perkongsian keuntungan syarikat.

Jualan Bulanan (RM)	Bilangan pekerja
30 – 34	3
35 – 39	7
40 – 44	11
45 – 49	22
50 – 54	40
55 – 59	34
60 – 64	9
65 - 69	4

Jadual 2

Daripada jadual di atas, kirakan min, median dan mod.

[20 markah]

CLO1

- (b) Tentukan kepencongan dari jawapan 2(a) dengan menggunakan gambarajah yang sesuai.

[5 markah]

**QUESTION 3**

- CLO1 (a) Elaborate the sample space and the number of outcomes of possible outcomes of each experiment below by using set of notations.
- i. A coin is tossed
  - ii. Two (2) coins are tossed together
  - iii. A dice is rolled
  - iv. A dice is rolled and a coin is tossed together
- [10 marks]
- CLO1 (b) A test on Mathematics and Science subjects was conducted at a School of Engineering for 125 engineering students. The results are as follows:
- 20 students passed both Mathematics and Science.
  - 30 students passed only Mathematics.
  - 40 students passed only Science.
  - 35 students failed both subjects.
- i. Prepare a contingency table showing the distribution of preferences.  
[4 marks]
  - ii. Calculate the probability that students passed both subjects.  
[2 marks]
  - iii. Calculate the probability that a randomly chosen student passed at least one subject.  
[2 marks]
  - iv. Calculate the probability that a student failed Science given that they also failed Mathematics.  
[2 marks]

- CLO1 (c) A warehouse manager records the number of defective items found in 100 randomly boxes of electronics components as below:

<b>Number of Defectives Items (x)</b>	<b>Number of boxes</b>
0	50
1	25
2	15
3	7
4	3

Table 3

Calculate the probability that a randomly selected box has at most two (2) defectives items.

[5 marks]

**SOALAN 3**

- CLO1 (a) Tentukan ruang sampel dan bilangan hasil bagi setiap eksperimen di bawah dengan menggunakan set notasi.
- i. Sekeping syiling dibaling
  - ii. Dua keping syiling dibaling bersama
  - iii. Sebiji dadu digolek
  - iv. Sebiji dadu digolek dan sekeping syiling dibaling bersama
- [10 markah]
- CLO1 (b) Ujian bagi mata pelajaran Matematik dan Sains telah dijalankan di sebuah Sekolah Kejuruteraan untuk 125 orang pelajar kejuruteraan. Keputusannya adalah seperti berikut:
- 20 orang pelajar lulus kedua-dua mata pelajaran Matematik dan Sains.
  - 30 orang pelajar lulus hanya Matematik.
  - 40 orang pelajar lulus hanya Sains.
  - 35 pelajar gagal kedua-dua mata pelajaran.
- i. Sediakan jadual luar jangka yang menunjukkan taburan keutamaan.  
[4 markah]
  - ii. Hitung kebarangkalian bahawa pelajar lulus kedua-dua mata pelajaran  
[2 markah]
  - iii. Hitung kebarangkalian bahawa pelajar yang dipilih secara rawak lulus sekurang-kurangnya satu mata pelajaran.  
[2 markah]
  - iv. Hitung kebarangkalian bahawa seorang pelajar gagal dalam Sains diberi bahawa mereka juga gagal dalam Matematik.  
[2 markah]

- CLO1 (c) *Pengurus gudang merekodkan bilangan item rosak yang ditemui dalam 100 kotak komponen elektronik yang dipilih secara rawak seperti berikut:*

<b>Bilangan Item yang Rosak (x)</b>	<b>Bilangan kotak</b>
0	50
1	25
2	15
3	7
4	3

*Jadual 3*

*Hitung kebarangkalian bahawa kotak yang dipilih secara rawak mempunyai paling banyak dua (2) item yang rosak.*

*[5 markah]*

**QUESTION 4**

- CLO1 (a) Categorize the following sampling techniques into probability sampling or non-probability sampling:
- i. Convenience sampling
  - ii. Judgemental sampling
  - iii. Simple Random sampling
  - iv. Systematic sampling
  - v. Quota Sampling
- [5 marks]

- CLO1 (b) A sample of 50 students have an average exam score of 70 with a population standard deviation ( $\sigma$ ) of 10. Construct a 95% confidence interval for the population mean.
- [10 marks]

- CLO1 (c) A lecturer at ABC University claims that the student in his school have above average intelligence. A random sample of 30 students IQ has a mean score of 111. Is there sufficient evidence to support the lecturer's claim? The mean IQ of the population is 100 with a standard deviation of 15. Use a 0.05 level of significance to justify your answer. Prepare your answer.
- [10 marks]

**SOALAN 4**

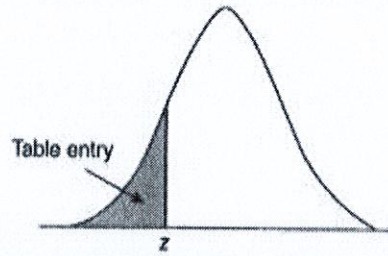
- CLO1 (a) Kategorikan teknik pensampelan yang berikut kepada pensampelan kebarangkalian atau pensampelan bukan probabiliti:
- i. Pensampelan mudah
  - ii. Pensampelan perkiraan
  - iii. Pensampelan rawak mudah
  - iv. Pensampelan sistematik
  - v. Pensampelan kuota
- [5 markah]
- CLO1 (b) Sampel untuk 50 orang pelajar mempunyai purata markah peperiksaan 70 dengan sisihan piawai populasi ( $\sigma$ ) 10. Bina 95% selang keyakinan untuk min populasi.
- [10 markah]
- CLO1 (c) Pensyarah di Universiti ABC mendakwa bahawa pelajar di sekolahnya mempunyai kecerdasan di atas purata. Sampel rawak IQ 30 pelajar mempunyai skor min 111. Adakah terdapat bukti yang mencukupi untuk menyokong tuntutan pensyarah? Min IQ populasi ialah 100 dengan sisihan piawai 15. Gunakan aras keertian 0.05 untuk mewajarkan jawapan anda. Sediakan jawapan anda.
- [10 markah]

**SOALAN TAMAT**

FORMULA STATISTICS	
Sturges Rule	$k = 1 + 3.3 \log_{10} n$
Range	$R = \text{Highest value} - \text{Lowest value}$
Class Width	$c = \frac{\text{Range}}{k}$
Mean	$\bar{x} = \frac{\sum x}{n}$ $\bar{x} = \frac{\sum fx}{\sum f}$
Mode	$\hat{x} = L_{M0} + \left[ \frac{d_1}{d_1 + d_2} \right] c$
Median	$\tilde{x} = L_M + \left[ \frac{\frac{\sum f}{2} - F_{M-1}}{f_M} \right] c$
Quartile	$Q_k = L_{Q_k} + \left[ \frac{\frac{kN}{4} - F_{Q_k-1}}{f_{Q_k}} \right] c$ ; $k = 1, 2, 3$
Percentile	$P_k = L_{P_k} + \left[ \frac{\frac{kN}{100} - F_{P_k-1}}{f_{P_k}} \right] c$ ; $k = 1, 2, 3, \dots, 99$
Mean Deviation	$E = \frac{\sum  x - \bar{x} }{n}$ $E = \frac{\sum ( x - \bar{x} f)}{\sum f}$
Variance	$s^2 = \frac{\sum (x - \bar{x})^2}{n}$ $s^2 = \frac{\sum_{i=1}^n x_i^2 - n\bar{x}^2}{n}$
	$s^2 = \frac{\sum [(x - \bar{x})^2 f]}{\sum f}$ $s^2 = \frac{\sum fx^2}{\sum f} - \left[ \frac{\sum fx}{\sum f} \right]^2$
Standard Deviation	$s = \sqrt{\text{variance}}$
Lower Outlier Boundary	$\hat{x} = \bar{x} - 3(\bar{x} - \tilde{x})$

FORMULA STATISTICS		
Probability	$P(A) = \frac{n(A)}{n(S)}$	$P(A \cup B) = P(A) + P(B)$
	$P(A') = 1 - P(A)$	$P(A \cup B) = P(A) + P(B) - P(A \cap B)$
	$P(A \cap B) = P(A) \cdot P(B)$	$P(A \cap B) = P(A) \cdot P(B A)$
	$P(A B) = \frac{P(B A) \cdot P(A)}{P(B)}$	$P(B A) = \frac{P(A \cap B)}{P(A)}$
Confidence Interval	$CI = \bar{x} \pm Z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$	
Statistical test	$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$	$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$
Chi-Square ( $\chi^2$ ) Tests	$\chi^2 = \sum \frac{(O - E)^2}{E}$	
Index Numbers	$\frac{P_t}{P_o} * 100$	
	$\frac{1}{n} \left[ \sum \left( \frac{P_t}{P_o} * 100 \right) \right]$	
	$\frac{\sum P_t}{\sum P_o} * 100$	
	$P_L = \frac{\sum(P_t * Q_o)}{\sum(P_o * Q_o)} * 100$	
	$P_P = \frac{\sum(P_t * Q_t)}{\sum(P_o * Q_t)} * 100$	

## Standard Normal Probabilities



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641



# 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
<b>Z</b>	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%
	<b>Confidence Level</b>										