SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI DISEMBER 2017

DPB1013 : STATISTICS

TARIKH : 02 APRIL 2018
MASA : 2.30 PETANG - 4.30 PETANG (2 JAM)

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

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula, t-Table dan z-Table

---

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
C1

a) Identify the following variables, whether it is quantitative or qualitative:
Kenal pasti pembolehubah berikut sama ada ianya kuantitatif atau kualitatif:

i. State of health of residents in Bukit Katil
Keadaan kesihatan penduduk di Bukit Katil

ii. Number of workers at Teac Electronic Sdn.Bhd
Bilangan pekerja di Teac Electronic Sdn.Bhd

iii. Time taken for study
Masa di ambil untuk kajian

iv. Colors of our national car.
Warna kereta nasional kita.

v. Annual profit of Tesco Hypermarket
Keuntungan tahunan Pasar Raya Tesco

[5 marks]
[*5 markah*]

CLO1
C1

b) i. Define the measure of central tendency.
Berikan definisi ukuran kecenderungan memusat.

[2 marks]
[*2 markah*]

CLO1
C1

ii. List the types of central tendency.
Senaraikan jenis-jenis kecenderungan memusat.

[3 marks]
[3 *markah*]

CLO1
C2

(c) Below is the data collected in a study regarding the customer's order for furniture at Fazzy Furniture Sdn. Bhd.

Berikut adalah data yang terkumpul dalam kajian mengenai tempahan pelanggan untuk perabot di Fazzy Furniture Sdn. Bhd.

Number of Furniture *Bilangan Perabot*	Number of Orders *Bilangan Tempahan*
10 – 19	85
20 – 29	120
30 – 39	225
40 - 49	135
50 - 59	105
60 - 69	30

Based on the data above, you are required to calculate the value of:

Berdasarkan data di atas, anda dikehendaki untuk mengira nilai:

i. Mean

Min

[5 marks]
[5 *markah*]

ii. Mode

Mod

[5 marks]
[5 *markah*]

iii. Median

Median

[5 marks]
[5 *markah*]

QUESTION 2
SOALAN 2

(a) i. Define range.

CLO1
C1

Definisikan julat.

[2 marks]
[*2 markah*]

ii. Identify the range of the following data:

Kenal pasti nilai julat bagi data berikut:

Height (cm) *Tinggi (cm)*	Frequency *Kekerapan*
150 – 155	5
155 - 160	10
160 - 165	8
165 - 170	6

[3 marks]
[3 markah]

CLO1
C2

(b) The following table shows the time (in minutes) taken by 40 students to complete a test.

Jadual berikut menunjukkan masa (dalam minit) yang di ambil oleh 40 pelajar untuk menyiapkan satu ujian

Time (minutes) *Masa (minit)*	Number of students *Bilangan Pelajar*
70.1-80.0	2
80.1-90.0	4
90.1-100.0	15
100.1-110.0	8
110.1-120.0	11

Calculate:

Kirakan:

i. Variance

Varians

[10 marks]
[10 markah]

ii. Standard Deviation

Sisihan Piawai

[5 marks]
[5 markah]

(c) Around 60 college students were randomly chosen and their scores obtained for a particular Statistics Quiz are given below.

CLO1
C2

Seramai 60 orang pelajar kolej telah dipilih secara rawak dan skor yang diperoleh dalam Kuiz Statistik adalah seperti di bawah.

Mean = 58.4
Median = 56.8
Mode = 54.2
Variance = 21.16

i. Calculate the Pearson's Coefficient of Variation 2

Kira Pearson's Coefficient of Variation 2

[4 marks]
[4 markah]

ii. Determine the skewness of distribution by sketching the graph

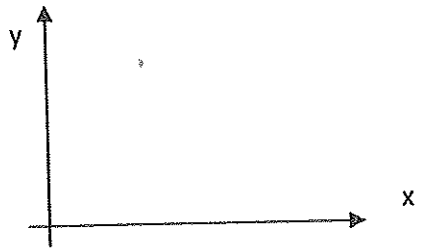
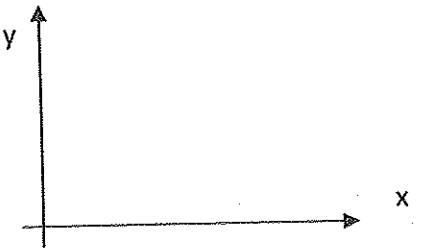
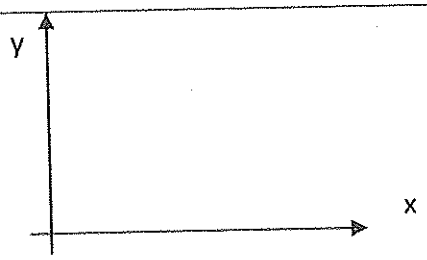
Tentukan jenis kepencongan taburan dengan melakarkan graf

[1 marks]
[1 markah]

QUESTION 3
SOALAN 3

CLO1
C1

a) Draw a scatter diagram based on the conclusion given.
Lukiskan gambarajah serakan berdasarkan kesimpulan yang diberikan.

Scatter Diagram *Gambarajah Serakan*	Conclusion *Kesimpulan*
	Positive Correlation *Korelasi Positif*
	Perfect Positive Correlation *Korelasi Positif Sempurna*
	Negative Correlation *Korelasi Negatif*
	Perfect Negative Correlation *Korelasi Negatif Sempurna*
	No Correlation *Tiada Korelasi*

[10 marks]
[*10 markah*]

b) Seasons Delight has collected data on its annual sales and advertisement expenses. The company wants to recognize whether the expenses in advertisement give positive impacts to the sales for the last 7 months. The data is given in the table below:

Seasons Delight telah mengumpul data berhubung jualan tahunannya dan perbelanjaan pengiklanan tahunan. Syarikat ingin mengenal pasti sama ada perbelanjaan dalam pengiklanan memberi kesan positif kepada jualan untuk 7 bulan yang lalu. Data tersebut diberikan dalam jadual berikut:

Month *Bulan*	Advertisement Expenses *Perbelanjaan Pengiklanan* (RM'000)	Sales *Jualan* (Million / *Juta*)
January	2	8
February	4	12
Mac	7	17
April	8	20
May	10	22
June	13	28
July	14	32

CLO1
C2

Identify the regression line using the least square method.

Kenal pasti garisan regresi menggunakan kaedah kuasa dua terkecil.

[15 marks]

[*15 markah*]

QUESTION 4
SOALAN 4

a) The data below shows the total of books borrowed by 40 students at Politeknik Merlimau Melaka in 1 month.

CLO2
C3

Data di bawah menunjukkan jumlah buku yang dipinjam oleh 40 orang pelajar di Politeknik Merlimau Melaka bagi tempoh 1 bulan.

22	23	23	7	25	8	25	11	12	13
18	18	19	15	20	16	20	16	17	17
14	15	15	19	15	20	16	20	21	21
2	3	4	24	8	25	10	25	25	25

Schedule a frequency distribution table which includes the class interval, tally marks, frequency, relative frequency and class boundaries.

Rencanakan sebuah jadual kekerapan longgokan termasuk selang kelas, markah gundalan, kekerapan, kekerapan relatif dan sempadan kelas.

[15 marks]
[*15 markah*]

CLO2
C3

b) Three companies LALA, MAMA and SASA are competing for a contract to build a house. The probabilities that companies LALA, MAMA and SASA will win the contract are 0.3, 0.4 and 0.3 respectively. If company LALA, MAMA and SASA win the contract, the probability that they will make profits are 0.8, 0.9 and 0.7 respectively. Sketch a Tree Diagram based on the information given in the question.

Tiga syarikat iaitu LALA, MAMA dan SASA bersaing untuk mendapatkan kontrak pembinaan rumah. Kebarangkalian syarikat LALA, MAMA dan SASA untuk memenangi kontrak adalah 0.3, 0.4 dan 0.3. Jika syarikat LALA, MAMA dan SASA memenangi kontrak berkenaan, kebarangkalian bahawa mereka akan mendapat keuntungan adalah 0.8, 0.9 dan 0.7.
Lakarkan Gambar Rajah Pokok berdasarkan maklumat yang diberikan dalam soalan.

[10 marks]
[10 markah]

SOALAN TAMAT

FORMULA STATISTICS

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

R = Highest Value – Lowest Value

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

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

$$x = L_m + \left[\frac{\frac{\sum f}{2} - F}{fm} \right] x\ C$$

$$x = L_b + \left[\frac{(fo - f1)}{(fo - f1) + (fo - f2)} \right] x\ C$$

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

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

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

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

$$x = \frac{(\bar{x} - \hat{x})}{s}$$

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

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

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

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

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

$$y = a + bx$$

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

$$\bar{x} \pm t_{\alpha/2\, v=n-1} \frac{s}{\sqrt{n}}$$

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

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										

Standard Normal Probabilities

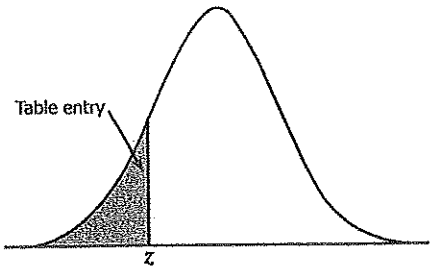


Table entry for z is the area under the standard normal curve to the left of z.

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

Standard Normal Probabilities

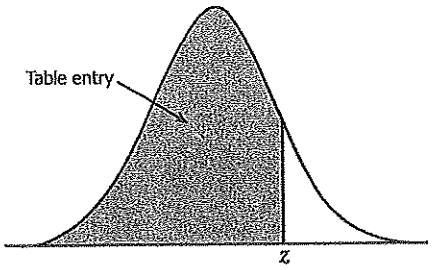


Table entry for z is the area under the standard normal curve to the left of z.

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