SULIT

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

JABATAN PERDAGANGAN

PENILAIAN ALTERNATIF

SESI 1: 2021/2022

DPB30063 STATISTICS

NAMA PENYELARAS KURSUS : SITI MAHANUM BINTI SHAIK ISMAIL

KAEDAH PENILAIAN : PEPERIKSAAN ATAS TALIAN

JENIS PENILAIAN : ESEI BERSTRUKTUR (4 SOALAN)

TARIKH PENILAIAN : 28 JANUARI 2022

TEMPOH PENILAIAN : 2 JAM

LARANGAN TERHADAP PLAGIARISM (AKTA 174)
PELAJAR TIDAK BOLEH MEMPLAGIAT APA-APA IDEA, PENULISAN, DATA ATAU CIPTAAN ORANG LAIN. PLAGIAT ADALAH SALAH SATU PENYELEWENGAN AKADEMIK. SEKIRANYA PELAJAR DIBUKTIKAN MELAKUKAN PLAGIARISM, PENILAIAN BAGI KURSUS BERKENAAN AKAN DIMANSUHKAN DAN DIBERI GRED F DENGAN NILAI MATA 0.
(RUJUK BUKU ARAHAN-ARAHAN PEPERIKSAAN DAN KAEDAH PENILAIAN (Diploma) EDISI 6, JUN 2019, KLAUSA 17.3)

SECTION A: 100 MARKS
BAHAGIAN A: 100 MARKAH

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

(a) A survey was conducted by a group of students to study the demographic characteristics of excellent students in PSA. There were 1300 of students obtained Cumulative Grade Point Average (CGPA) above 3.75 from Session June 2020. The survey was conducted based on the current situation and a total of 300 from these students were chosen as respondents.
Tinjauan yang dijalankan oleh sekumpulan pelajar untuk mengkaji ciri-ciri demografi pelajar cemerlang di PSA. Terdapat 1300 pelajar memperoleh Purata Nilai Gred Kumulatif (PNGK) melebihi 3.75 darpadai Sesi Jun 2020. Tinjauan ini dijalankan berdasarkan situasi semasa dan seramai 300 daripada pelajar ini telah dipilih sebagai responden.

CLO1
C1

i. Identify whether the data is categorized under primary data or secondary data?
Kenal pasti sama ada data ini dikategorikan sebagai data primer atau data sekunder?

[1 mark]

ii. Point the population and sample in this survey.
Tunjukkan populasi dan sampel dalam kajian ini.

[2 marks]

iii. State the type of variable (either quantitative or qualitative) for each following demographic characteristic:
Nyatakan jenis pembolehubah (sama ada kuantitatif atau kualitatif) untuk setiap ciri-ciri demografi di bawah:

[4 marks]

a) Age
Umur

b) Semester
Semester

c) CGPA
PNGK

d) Programme
Program

iv. Describe the method of data collection that is appropriate for this survey.
Huraikan kaedah pengumpulan data yang sesuai untuk kajian ini.

[3 marks]

(b) Data below show a sample of lecturer age in Commerce Department.
Data di bawah menunjukkan sampel umur pensyarah di Jabatan Perdagangan

48	39	40	33	42	41	31	40	48	42
34	48	49	42	40	51	40	31	39	40
41	45	31	47	46	41	34	42	53	38
51	32	51	42	42	30	43	53	49	37
42	30	40	39	42	55	44	52	33	47

CLO2
C2

(i) From the data, locate:
Daripada data, cari:

a. number of classes, k
bilangan kelas, k

[2 marks]

b. range
julat

[1 mark]

c. class width, c
lebar kelas, c

[2 marks]

CLO2
C3

(ii) Construct frequency distribution table for the data with class interval, class boundaries, tally, frequency and midpoint.
Bina jadual taburan kekerapan yang mengandungi selang kelas, sempadan kelas, gundalan, kekerapan dan titik tengah.

[10 marks]

QUESTION 2
SOALAN 2

(a) Twelve major earthquakes had richter magnitudes as shown here.
Dua belas gempa bumi besar mempunyai magnitud yang lebih tinggi ditunjukkan di sini.

7.0	6.2	7.7	8.0	6.4	6.2	7.2	5.4	6.4	6.5	7.2	5.4

CLO2
C2

Locate:
Cari:

i. Mean [4 marks]
Min

ii. Median [3 marks]
Median

iii. Mode [2 marks]
Mod

iv. Range [3 marks]
Julat

(b) The age of the workers in Proton City Factory are as follows:
Umur pekerja di Kilang Proton City adalah seperti berikut:

Age (years) ***Umur (tahun)***	**No. of workers** ***Bilangan pekerja***
20-24	12
25-29	34
30-34	20
35-39	13
40-44	10
45-49	7
50-54	4

CLO2
C3

You are required to calculate:
Anda dikehendaki untuk mengira:

i. Standard Deviation [10 marks]
Sisihan Piawai

ii. Pearson Coefficient of Skewness 1 if mode = 27.56 and write the skewness of the data distribution.
Pekali Kepencongan Pearson 1 jika mod = 27.56 dan tulis kepencongan taburan data tersebut.
[3 marks]

QUESTION 3
SOALAN 3

CLO2
C2

(a) The probability of a fine day is $\frac{3}{7}$ and the probability of a wet day is $\frac{4}{7}$. If it is a fine day, the probability that Azman cycles to work is $\frac{7}{10}$. Meanwhile, the probability that Azman drives to work is $\frac{2}{10}$ and takes the train to work is $\frac{1}{10}$. If it is a wet day, the probability that Azman cycles to work is $\frac{1}{9}$. Meanwhile, the probability that Azman drives to work is $\frac{5}{9}$ and takes the train to work is $\frac{3}{9}$.
Kebarangkalian hari cerah ialah $\frac{3}{7}$ dan kebarangkalian hari hujan ialah $\frac{4}{7}$. Sekiranya hari cerah, kebarangkalian Azman berbasikal ke tempat kerja ialah $\frac{7}{10}$. Manakala kebarangkalian Azman memandu ke tempat kerja ialah $\frac{2}{10}$ dan menaiki kereta api ke tempat kerja ialah $\frac{1}{10}$. Sekiranya hari hujan, kebarangkalian Azman berbasikal ke tempat kerja ialah $\frac{1}{9}$. Manakala kebarangkalian Azman memandu ke tempat kerja ialah $\frac{5}{9}$ dan menaiki kereta api ke tempat kerja ialah $\frac{3}{9}$.

i. Visualize a tree diagram based on the information given in the question.
Visualisasikan gambarajah pokok berdasarkan maklumat yang diberikan dalam soalan.

[8 marks]

ii. If Azman works 315 days in a year, locate how many days is he likely to drive to work?
Jika Azman bekerja 315 hari dalam setahun, cari berapa hari dia mungkin memandu ke tempat kerja?

[2 marks]

CLO2
C3

(b) Halloo company has 6 clerks, 8 accountants and 6 executive officers. 4 of the clerks, 5 of the accountants and 4 of the executive officers are female.
Syarikat Halloo mempunyai 6 kerani, 8 akauntan dan 6 pegawai eksekutif. 4 orang kerani, 5 daripada akauntan dan 4 daripada pegawai eksekutif adalah perempuan.
Based on the above information:
Berdasarkan pada maklumat di atas:

i. Construct a two-way table.
Bina jadual dua hala.

[5 marks]

ii. Calculate the:
Kira:
   a. probability that staff is male.
   kebarangkalian staff adalah lelaki.

[3 marks]

b. probability that the staff is female.
kebarangkalian staff adalah perempuan.

[3 marks]

c. probability that the staff is male and an executive officer.
kebarangkalian staff adalah lelaki dan pegawai eksekutif.

[4 marks]

QUESTION 4
SOALAN 4

CLO2
C2

(a) The table below shows the discount rates and the average number of customers who walks in to the Stylish Boutique in 6 months.
Jadual di bawah menunjukkan kadar diskaun dan purata bilangan pelanggan yang masuk ke Butik Stylish bagi tempoh sebulan.

Discount rate in % ***Kadar diskaun dalam %, x***	**Number of customers, y** ***Bilangan pelanggan, y***
15	90
10	70
40	120
45	120
55	280
30	85
18	70
20	120
75	380
25	70

Interpret the strength of the relationship between those two variables by using Spearman's rank correlation coefficient.
Interpretasi kekuatan hubungan di antara dua pembolehubah tersebut menggunakan pekali korelasi Spearman.

[12 marks]

CLO2
C3

(b) EKEYA Company claims that the strength of TEYA chair is 100 kg. Recently, the operational manager thinks that changing new material will change the strength of the chair. Therefore, the EKEYA Company hired a researcher to investigate whether by changing new material the strength of TEYA chair will increase, decrease or remain unchanged. 16 samples of observation were made

and it was found that mean strength and standard deviation are 99.5 kg and 15 respectively. Demonstrate **FIVE (5)** steps of hypothesis testing by using 5% of significance level.
*Syarikat EKEYA mendakwa bahawa kekuatan kerusi TEYA ialah 100 kg. Baru-baru ini, pengurus operasinya merasakan bahawa dengan menukar material baru akan mengubah kekuatan kerusi tersebut. Oleh itu, Syarikat EKEYA mengupah seorang penyelidik untuk menyiasat sama ada dengan menukar bahan baharu kekuatan kerusi TEYA akan meningkat, berkurangan atau kekal tidak berubah. 16 sampel pemerhatian telah dilakukan dan didapati min kekuatan dan sisihan piawaian masing-masing sebanyak 99.5 kg dan 15. Demostrasi **LIMA (5)** langkah ujian hipotesis dengan menggunakan 5% aras keertian.*

[13 marks]

SOALAN TAMAT

FORMULA STATISTICS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$y = a + bx$$

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

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

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

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

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

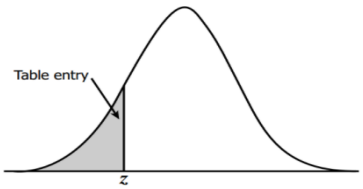
$$\overline{\boldsymbol{x}} \pm Z_{\alpha/2}\frac{\alpha}{\sqrt{n}}$$

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

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

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										



Standard Normal Probabilities

Table entry for z table 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