



## FINAL EXAMINATION MARCH 2024

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<b>COURSE TITLE</b>	<b>BASIC STATISTICS</b>
<b>COURSE CODE</b>	<b>EPSY2133</b>
<b>DATE/DAY</b>	<b>22 JUNE 2024 / SATURDAY</b>
<b>TIME/DURATION</b>	<b>01:00 PM - 03:00 PM / 02 Hour(s) 00 Minute(s)</b>

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### INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of 3 Printed Pages including front page)

\*\*\*DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO\*\*\*

There are **FOUR (4)** questions in this section. Answer **ALL** questions in the Answer Booklet. **[50 MARKS]**

1. A group of real estate students is interested in finding out something about the average ringgit value of houses owned by each lecturer from SEH and BRBITE at UNIRAZAK, Kuala Lumpur. Describe each of the **FIVE (5)** terms to be identified in this situation. **(10 Marks)**
- a) Identify the **Sample** in this study. **(2 marks)**
  - b) Who is the **Population**? **(2 marks)**
  - c) What is the **Variable** to be determined? **(2 marks)**
  - d) What is the **Parameter** to be used? **(2 marks)**
  - e) What is the **Statistics** to be used? **(2 marks)**

2. Below is the SPSS output for Pearson Product Correlations Analysis. Based on the table below. **(10 Marks)**
- a) What is the decision rule from the result. **(4 marks)**
  - b) What is the reporting from the result from a) part? **(6 marks)**

**Correlations**

		Age	Cholesterol
Age	Pearson Correlation	1	.882**
	Sig. (2-tailed)		.001
	N	10	10
Cholesterol	Pearson Correlation	.882**	1
	Sig. (2-tailed)	.001	
	N	10	10

\*\* . Correlation is significant at the 0.01 level (2-tailed).

3. Due to the high demand of durian buffet during festival season holidays, Shahzreel decided to venture a new business for his side income. However, he is contemplating finding a good supplier for his new business. Supplier A gave him a deal of a box of durian with 900 kg of mean and 10kg of standard deviation. Meanwhile, supplier B gave him a deal of a box of durian with 650kg mean and 10kg of standard deviation.
- a) Based on the information above, which supplier will be selected as the best new official supplier? **(2 marks)**
  - b) Justify why decision in (a) has been made? **(4 marks)**
  - c) What is the parameter that you used to help Shahzreel to make his business decision? **(4 marks)**

4. The following table gives information on the average saturated fat (in grams) consumed per day and the cholesterol level (in milligrams per hundred milliliters) for eight men.

<b>Fat consumption</b>	55	68	50	43	34	58	77	36
<b>Cholesterol level</b>	180	215	195	170	165	204	235	150

- a) Draw scattered diagram based on the information above. (10 marks)  
b) From the scattered diagram, briefly describe the relationship between the fat consumption and cholesterol level. (2 marks)  
c) Generate the regression equation form the data above (8 marks)

\*\*\* END OF QUESTION PAPER \*\*\*

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FORMULA SHEET

Sturge's Rule :  $c = 1 + 3.3 \log n$

Class width :  $i > \frac{\text{range}}{c}$

Arithmetic mean:  $\bar{x} = \frac{\sum fx}{\sum f}$

Median:  $L_m + \left( \frac{\frac{n}{2} - F}{f_m} \right) i$

Mode:  $L_{mo} + \left( \frac{\Delta_1}{\Delta_1 + \Delta_2} \right) i$

Standard Deviation: 1)  $s = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$

2)  $s = \sqrt{\frac{\sum fx^2 - \frac{(\sum fx)^2}{n}}{n-1}}$

Sk :  $\frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$  or  $\frac{\text{mean} - \text{mode}}{\text{standard deviation}}$

CV :  $\frac{\text{standard deviation}}{\text{mean}} \times 100\%$

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

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

Confidence interval ( $\sigma$  known) :  $\bar{x} \pm z \frac{\sigma}{\sqrt{n}}$

Test statistic ( $\sigma$  known) :  $z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$

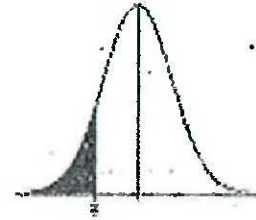
Correlation of coefficient,  $r = \frac{(n)(\sum xy) - (\sum x)(\sum y)}{\sqrt{(n)(\sum x^2) - (\sum x)^2} \sqrt{(n)(\sum y^2) - (\sum y)^2}}$

Slope,  $b_1 = \frac{(n)(\sum xy) - (\sum x)(\sum y)}{(n)(\sum x^2) - (\sum x)^2}$

Y-Intercept,  $b_0 = \bar{y} - b_1 \bar{x}$

Regression Line,  $\hat{y} = b_0 + b_1 x$

### Standard Normal Cumulative Probability Table

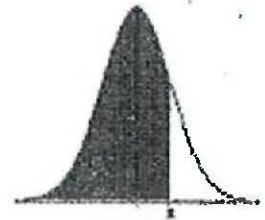


Cumulative probabilities for NEGATIVE z-values are shown in the following table:

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	0.0165	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	0.0706	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0836	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	0.2399	0.2368	0.2327	0.2295	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	0.2945	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3335	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	0.4089	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



### Standard Normal Cumulative Probability Table



Cumulative probabilities for POSITIVE z-values are shown in the following table:

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8105	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9615	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9685	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9725	0.9732	0.9738	0.9744	0.9750	0.9755	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998