PENINSULA COLLEGE
GEORGETOWN

FINAL EXAMINATION

Programme Name	:	**DIPLOMA IN E-BUSINESS TECHNOLOGY**
Course Code & Name	:	**DEB1223 BUSINESS STATISTICS**
Duration	:	**3 HOURS**

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY.**
2. The question paper consists of **FOUR (4)** questions.
3. Answer **ALL** questions in the question paper.
4. Answers to the questions are to be written into the examination booklet.
5. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in the accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(*This booklet contains 6 printed pages including this page*)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ALL** questions on the separate sheet provided. **[100 marks]**

1. a) Determine whether each of the following variables is qualitative or quantitative. Also state the level of measurement that can be used for each of the variables. (10 marks)

   i) numbers on the jerseys of volleyball players.

   ii) Temperature of the 13 states in Malaysia.

   iii) Lecturer of Introduction to Management class rated as excellent, good, average or poor.

   iv) Types of cars driven by students in a university.

   v) The number of calories in 50 cookies.

   b) ABC associates recently conducted trainig for its workers. The management wants to determine whether the training has improved its workers' productivity. The following table shows the productivity of ABC associates' workers after the training.

Productivity (hour)	3.0 - 4.0	4.0 - 5.0	5.0 - 6.0	6.0 - 7.0	7.0 - 8.0	8.0 - 9.0
Number of workers	5	10	18	32	23	12

   Compute the mean and the sample standard deviation by developing a table to show the calculation of midpoint, fx and fx^2. (15 marks)

   Total: [25 marks]

2. a) The three-year annual returns of 14 low-risk funds are given as follows:

9.77	31.50	22.47	38.16	17.48	18.37	18.61
11.35	21.49	12.46	13.80	15.47	18.47	20.72

   Find the median and interquartile range. (7 marks)

   b) The following table shows the average prices of petrol, diesel and cooking gas for 2020, 2021 and 2022.

Item	2020	2021	2022
Petrol	1.90	2.30	2.50
Diesel	1.60	2.20	2.40
Cooking gas	1.00	1.20	1.30

   Using simple average of price relative method, compute the price index for 2022 using 2020 as the base. (8 marks)

2. c) The prices and quantities of fruits sold in Sunshine shop from year 2019 and 2020 are shown as follow.

Types of fruit	2019		2020	
	Price per kg, RM	Quantity, kg	Price per kg, RM	Quantity, kg
Orange	2.40	140	5.20	195
Grape	12.40	75	14.00	95
Papaya	1.40	49	1.60	75

Using 2019 as the base year, calculate the Laypeyres' quantity index for 2020.

(10 marks)

Total: [25 marks]

3. The following table shows the interest rates for car loans and the average number of customers who apply for the loans in a month from a finance company.

Interest rate in %, x	6.0	6.2	6.5	7.0	7.5	8.0	8.2	8.7
Number of applicants, y	80	80	78	50	60	50	45	40

a) Develop a table to show the calculation of x^2, y^2 and xy. (12 marks)

b) Compute the Pearson product moment correlation of coefficient and interpret your result.

(7 marks)

c) Using the least square method, construct the regression equation ($y' = a + bx$).

(6 marks)

Total: [25 marks]

4. a) You are purchasing a new car. The possible manufacturers are Ford, Honda and Toyota followed by the car sizes either sedan or SUV. Draw a tree diagram to illustrate on the car selection.

(6 marks)

b) Find the different permutation can be formed from the word PROBABILITY.

(3 marks)

c) Find the different combination ways a student can choose from four out of six questions in Business Statistics final examination.

(4 marks)

4. d) The table below shows the total sales of a company doing business from Monday through Friday.

Week	Days	Sales (RM'000)	Trend (RM'000)
1	Monday	30	
	Tuesday	34	
	Wednesday	56	44.2
	Thursday	42	44.0
	Friday	59	47.6
2	Monday	29	**P**
	Tuesday	52	**Q**
	Wednesday	43	**R**
	Thursday	37	**S**
	Friday	60	**T**
3	Monday	43	**U**
	Tuesday	38	45.0
	Wednesday	32	45.8
	Thursday	52	
	Friday	64	

Using the moving average method, find the values of P, Q, R, S, T and U.

(12 marks)

Total: [25 marks]

– END OF QUESTIONS –

FORMULAE LIST

MEASURES OF LOCATION AND DISPERSION

$$\text{Median} = \left(\frac{n+1}{2}\right)^{th} \text{term}$$

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

$$S^2 = \frac{\sum (X - \bar{X})^2}{n-1} = \frac{\sum X^2 - \frac{(\sum X)^2}{n}}{n-1}$$

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

$$s^2 = \frac{n(\sum f \cdot X_m^2) - (\sum f \cdot X_m)^2}{n(n-1)}$$

$$s = \sqrt{\frac{\sum f(x - \bar{x})^2}{n-1}} = \sqrt{\frac{n(\sum f \cdot X_m^2) - (\sum f \cdot X_m)^2}{n(n-1)}}$$

IQR = $Q_3 - Q_1$

INDEX NUMBER

$$\textit{Relative Price Index} = \frac{p_1}{p_0} \times 100$$

$$\textit{Average of Relative Price Index} = \frac{\sum \frac{p_1}{p_0} \times 100}{k}$$

$$\textit{Aggregate Price Index} = \frac{\sum p_1}{\sum p_0} \times 100$$

$$\textit{Relative Quantity Index} = \frac{q_1}{q_0} \times 100$$

$$\textit{Average of Relative Quantity Index} = \frac{\sum \frac{q_1}{q_0} \times 100}{k}$$

$$\textit{Aggregate Quantity index} = \frac{\sum q_1}{\sum q_0} \times 100$$

$$\textit{Laspeyres Price Index} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

$$\textit{Paasche Price Index} = \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$$

$$\textit{Laspeyres Quantity Index} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

$$\textit{Paasche Quantity Index} = \frac{\sum q_1 p_1}{\sum q_0 p_1} \times 100$$

CORRELATION AND REGRESSION

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

$$a = \frac{(\Sigma y)(\Sigma x^2) - (\Sigma x)(\Sigma xy)}{n(\Sigma x^2) - (\Sigma x)^2}$$

$$a = \frac{\Sigma Y}{n} - b\frac{\Sigma X}{n}$$

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

TIME SERIES

$$\boldsymbol{b = \frac{\sum tY - (\sum Y)\left(\frac{\sum t}{n}\right)}{\sum t^2 - \frac{(\sum t)^2}{n}}}$$

$$\boldsymbol{a = \frac{\sum Y}{n} - b\left(\frac{\sum t}{n}\right)}$$

– END OF FORMULAE LIST –