



SCHOOL OF ACCOUNTING AND BUSINESS
BSc. (APPLIED ACCOUNTING) GENERAL / SPECIAL DEGREE
PROGRAMME

YEAR I SEMESTER II (INTAKE V – GROUP A)
END SEMESTER EXAMINATION – JULY 2016

QMT 10230 Business Statistics

Date : 27th July 2016
Time : 9.00 a.m. – 12.00 p.m.
Duration : Three (03) hours

Instructions to Candidates:

- Write the Index Number in the space provided at the top of this sheet. Do not write your name anywhere in this question paper.
- Answer only **FIVE** (05) questions **including Question No. 01**
- Question No. 01 - Answer **ALL** questions in the paper itself and attach it to the answer script.
- All questions carry equal marks.
- The total marks for the paper is 100.
- Use of scientific calculator is allowed.
- Standard Normal Z-table and Key Statistical Formulas are provided.
- Graph Sheets are provided **on request**.
- Answers should be written neatly and legibly.

Question No. 01

Multiple Choice Questions; Choose the one alternative that best completes the statement or answers the question.

- i. Type of variable which can take any numerical value within upper and lower limit for calculation is classified as
 - a. Ordinal variable
 - b. Continuous variable
 - c. measuring variable
 - d. Flowchart variable
 - e. Discrete variable (.....)

- ii. If arithmetic mean is multiplied by the coefficient of variation then resulting value is classified as,
 - a. Coefficient of determination
 - b. Coefficient of deviation
 - c. Arithmetic mean
 - d. Standard deviation
 - e. Variance (.....)

- iii. Methods in statistics that uses sample statistics to estimate parameters of population are considered as,
 - a. Descriptive statistics
 - b. Inferential statistics
 - c. Absolute statistics
 - d. Coverage statistics
 - e. Random sample statistics (.....)

- iv. Probability distribution having shape of a bell and in which values of mean, median and mode lie in center of probability distribution is classified as,
- Uniform Distribution
 - Continuous Distribution
 - Normal Distribution
 - Discrete Distribution
 - Hyper Geometric Distribution (.....)
- v. Discrete probability distribution in which outcome is very small with a very small period of time is classified as
- Posterior distribution
 - Cumulative distribution
 - Normal distribution
 - Poisson distribution
 - Hyper geometric distribution (.....)
- vi. Which of the following statements is incorrect regarding sampling methods?
- The sample members are not selected randomly by the non-probability sampling methods,
 - The sample members are selected from the target population on a purely random base by the probability sampling methods,
 - In a simple random sample, each member in the target population has not equal chance of being selected,
 - Systematic random sampling method is used when a sampling frame (list of population members) exists.
 - Cluster sampling method is used where the target population can be naturally divided into clusters.
- (.....)

- vii. In the case of heterogeneous population, which of the following sampling method is the proper and effective method for selecting representative sample of the target population.
- Convenience sampling method,
 - Quota sampling method,
 - Stratified sampling method,
 - Cluster sampling method,
 - Judgment sampling method, (.....)
- viii. Which of the following interpretation is explained about the coefficient of determination (R^2).
- Proportion of mean variation,
 - Proportion of points on the line.
 - Proportion of explained variation,
 - Proportion of unexplained variation
 - Proportion of variance variation, (.....)

(02 Marks each X 8)

- ix. Following questions are based on scale of measurement and write down the relevant scale of measurement.

No.	Description	Measurement scale
a	Mode of purchasing raw materials (Cash/Credit)	
b	Monthly family income of each family in Colombo city	
c	Number of mobile customers in the Business school	
d	Level of satisfaction of workers { 1 dissatisfied, 2 satisfied, 3 strongly satisfied }	
e	Gender of each family member {F-female, M-male}	
f	Units of temperature in Fahrenheit scale	
g	Heights of each player of the cricket team	
h	Household water consumption per day in liters	

(0.5 Marks each X 8)

(Total 20 Marks)

Question No. 02

- i. “Relative measures of dispersion are more useful than absolute measures of dispersion.”
Comment.

(04 Marks)

- ii. Annual turn-over of selected companies in Banking and Insurance sectors for the year 2015 are given below.

Annual Turn-over (Rs. Mn)	Number of Companies	
	Banking	Insurance
00 - 19	12	18
20 - 39	18	25
40 - 59	22	31
60 - 79	30	40
80 - 99	38	19
100 - 119	21	15
120 - 139	09	02
Total	150	167

Using the above data, compute the followings measures for Banking and Insurance sectors separately and compare your results.

- Arithmetic Mean, Median and Mode,
- Variance and Standard deviation,
- Coefficient of Variance and,
- Combined Mean and Standard Deviation of Banking and Insurance sectors together.

(16 Marks)

(Total 20 Marks)

Question No. 03

- i. Explain how the relationship between two variables can be identified by using correlation analysis.

(04 Marks)

- ii. After completing their degree, 500 Management graduates sat for the aptitude test which organized by the reputed bank. Grade Point Averages (GPA) of 12 graduates, and their results for the aptitude test are given by the table below.

Name of Student	GPA	Aptitude Test Score (100)
A	2.89	66
B	3.05	72
C	2.05	65
D	3.59	77
E	3.30	71
F	3.24	75
G	3.79	84
H	3.88	87
I	2.90	55
J	2.20	60
K	3.56	80
L	3.12	63

Using the above data, you are required to,

- Draw a scatter diagram to show the nature of the relationship between the GPA and the Aptitude test.
- Compute the Karl Pearson's correlation coefficient between the GPA and the Aptitude test and interpret your result.
- Fit the regression model to explain the relationship between Aptitude Test Score and GPA.
- Estimate the Test Score for a student when GPA is 3.70.
- Determine the coefficient of determination and interpret your result.

(16 Marks)

(Total 20 Marks)

Question No. 04

- i. Evaluate the merits and demerits of the following sampling methods,
- Simple random sampling,
 - Stratified random sampling,
 - Systematic random sampling,
 - Quota sampling.

(12 Marks)

- ii. Ten salesman were ranked based on their efficiency level and the length of service as tabulated below.

Salesman	Rank for Efficiency	Rank for Length of Service
A	5	6
B	7	5
C	8	7
D	9	10
E	2	1
F	3	4
G	1	2
H	6	3
I	4	8
J	10	9

Compute Spearman's rank correlation coefficient between the efficiency and length of service and interpret your results.

(08 Marks)

(Total 20 Marks)

Question No. 05

- i. Define the following specific terms used in probability,
- Independent and Dependent Events,
 - Mutually exclusive events and equally likely events.

(04 Marks)

- ii. Alpha company limited assembles mobile phones for the international market using a specific machine. Ten percent of items produced on a machine are usually found to be defective. In a random sample of 15 items, find the probability that there will be,
- No defective item,
 - At least three defective items,
 - At most three defective items.

(06 Marks)

- iii. Stock **A** and **B** have the following probability distributions of expected future returns:

Economy Condition	Probability	Stock Return (%)	
		A	B
Deep Recession	0.10	-10	-35
Mild Recession	0.20	9	5
Normal	0.40	12	20
Minor Boom	0.25	25	25
Major Boom	0.05	32	45

Using the above details,

- Calculate the expected rate of return for each stock.
- Calculate the standard deviation of expected returns for each stock,
- Choose the best **stock** to invest in terms of return, and,
- Choose the best **stock** to invest in terms of risk,

(10 Marks)

(Total 20 Marks)

Question No. 06

- i. The number of users of an automated teller machine is followed the Poisson distribution. The mean number of users per 5-minute interval is 2. Calculate the probability,
- a. No users in the next 5-minutes,
 - b. At most four users in the next 5-minutes,
 - c. At least four users in the next 5-minutes,

(06 Marks)

- ii. In a survey of 500 audit trainees, it reveals that the monthly allowances of audit trainees are normally distributed with a mean of Rs. 6400 and standard deviation of Rs. 960. If an audit trainee is selected randomly,
- d. What is the probability that he/she is earning greater than Rs. 5,000?
 - e. What is the probability that he/she is earning in between Rs. 5,000 and Rs. 6,750?
 - f. What is the probability that he/she is earning in between Rs. 4,500 and Rs. 6,000?
 - g. What is the probability that he/she is earning in between Rs. 7,000 and Rs. 8,000?
 - h. What is the probability that he/she is earning greater than Rs. 8,000?
 - i. A reputed professional accounting institution decided to grant a special allowance of Rs. 1500 per month for each audit trainee who earns within the lowest 10% of allowances. Determine cut-off amount of monthly allowance of an audit trainee to entitle for the special grant of Rs. 1500 per month.

(14 Marks)

(Total 20 Marks)

Question No. 07

- i. Describe the methods which most commonly used for studying and measuring the trend component in a time series.

(03 Marks)

- ii. Annual income of **Ridi-Ella hotel** limited during last ten years are given by the following table.

Year	Annual Revenue in Rs.Mn
2006	133
2007	167
2008	151
2009	190
2010	169
2011	215
2012	190
2013	220
2014	200
2015	260

Using the above data,

- Plot a time-series graph.
- Estimate the Ordinary Least Square (OLS) trend line.
- Forecast the revenue of **Ridi-Ella hotel** for **next three years**.

(08 Marks)

- iii. Quarterly revenue of **Ridi-Ella hotel** for the previous four year are given below.

Year	Q1	Q2	Q3	Q4
2012	50	40	55	75
2013	45	40	50	70
2014	52	43	55	80
2015	60	50	60	90

Using the above data,

- Compute four-quarter moving averages and central moving averages for sales.
- Compute seasonal index using ratio to moving average method.

(09 Marks)

(Total 20 Marks)