MIDLANDS STATE UNIVERSITY

FACULTY OF COMMERCE

DEPARTMENT OF ACCOUNTING
QUANTITATIVE ANALYSIS OF BUSINESS:
(ACC 102)

SESSIONAL EXAMINATIONS

MAY/JUNE 2016
TOTAL MARKS: 100 MARKS
DURATION: 3 HOURS

INSTRUCTIONS

1. **Answer any FIVE questions.**
2. **Begin an answer to a new question on a new page.**
3. **This paper has FOUR printed pages.**

Provide Formulae booklet and standard normal distribution table.

Question 1 (20 marks)

The distance travelled (in km) by a taxi on 30 trips were recorded by the driver as follows:

24	19	21	27	20	17	17	32	22	26
18	13	23	30	10	13	18	22	34	16
18	23	15	19	28	25	25	20	17	15

a)Define the random variable, the data type and the measurement scale (3 marks)
b)Prepare an absolute frequency distribution (7 marks)
c)Construct a well labelled bar graph. (10 marks)

Question 2 (20 marks)

TelOne has implemented a system of charging out telephone calls based on the length of call. To find out how this new charging out system would affect its telephone bill, a market survey was carried out over a period of 3 days monitoring the duration of 600 calls made by its clients. The following frequency distribution was compiled:

Duration (minutes)	Number of calls
2-<5	38
5-<8	122
8-<11	186
11-<14	134
14-<17	98
17-<20	22

i)Find the mean of call length (3 marks)
ii) Find the median of call length (3 marks)
iii) Find the standard deviation of call length (3 marks)
iv)Establish the interquartile range (4 marks)
v) Establish the values of Pearson's skewness measure (3 marks)
vi) Establish the values of Bowley's skewness measure (4 marks)
Interpret your calculations where possible.

Question 3 (20 marks)

The Human Resources department of Prostar Insurance firm analysed the qualifications profile of their 129 managers. The qualification level is the highest qualification achieved by a manager. The results are as follows:

Qualification level		Management level	
	Section Head	Departmental Head	Division Head
A' level	28	14	**C**
Diploma	20	24	6
Degree	**A**	10	14
Total	53	**B**	28

Required

a)

i) Define the two random variables and data type (2 marks)
ii) Calculate **a**,**b** and **c** in the above (3 marks)
iii) What is the probability of a person selected at random:

b)having only an A' level? (1 mark)
c) being a section head and having a degree? (2marks)
d)being a departmental head given that they have a diploma? (4marks)
e)being divisional head or a section head? (3 marks)
f)having an A' level,or a diploma or a degree? (1 mark)
g)having A' level given that the person is a departmental head? (3 marks)
h) Are the events in (e) above mutually exclusive? Why? (1 marks)

Question 4

a)Give any two characteristics of a continuous random variable? (2 marks)
b) Give any three continuous random variables. (3 marks)
c)Determine the missing values for the following probabilities involving the standard normal distribution. Each determination carries 3 marks.
i)$P(0 \leq z \leq ?) = 0,4015$
ii)$P(? \leq z \leq 0) = 0,4803$
iii)$P(? \leq z) = 0,0985$
iv)$P(z \leq ?) = 0,7517$
v)$P(? \leq z) = 0,6331$

Question 5 (20 marks)

A company which supplies ready to drink beverages receives, on average, 6 orders per day.

a) What is the probability that on a given day:
   (i) No orders will be received? (2 marks)
   (ii) No more than 2 orders will be received? (3 marks)
   (iii) At least 3 orders will be received? (3 marks)
b) What is the probability that, on a given half-day, no orders will be received?(3 marks)
c) What is the mean and standard deviation of orders received per day? (4 marks)
d) Certain tablet are packed 12 per box. If 5% of the tablets manufactured are cracked, what is the probability that a randomly selected box will:
   (i) Be free of cracked tablets? (2 marks)
   (ii) Have not more than one cracked tablet? (3 marks)

Question 6 (20 marks)

a)Find the degree of association (Pearson's correlation coefficient=r) between Gweru City Council valuations and Market values. Is this a good association? Comment. (10 marks)

Council values	Market values
12	65
45	220
32	142
50	310
28	196
56	364
18	116
40	260

b) Find r^2 and comment (2 marks)
c) Calculate the exogenous factors in this association and comment. (2 marks)

d) Present the data on a scatter diagram. (6 marks)

THE END OF PAPER