



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE
DEGREE OF MASTER OF ARTS IN PROJECT PLANNING AND
MANAGEMENT
(CITY CAMPUS)

APP 802: QUANTITATIVE TECHNIQUES

Date: 28th November, 2013

Time: 5.30 - 8.30 p.m.

INSTRUCTIONS:

- Answer ANY FOUR questions.

APP802 QUANTITATIVE TECHNIQUES
CITY CAMPUS

Answer any FOUR QUESTIONS

1.The following data has been collected regarding sales and advertising expenditure.

Sales (shs.millions)	Advertising expenditure (shs.' 000)
8.5	210
9.2	250
7.9	290
8.6	330
9.4	370
10.1	410

a)Plot the above data on a scatter diagram,and using your judgement, decide whether there is a correlation between sales and advertising expenditure. **7marks**

b)Calculate Karl Pearsons coefficient of correlation.**8marks**

2.A company has a fleet of vehicles and is trying to predict the annual maintenance costs per vehicle.The following data have been supplied for a sample of vehicles:

Vehicle number	1	2	3	4	5	6	7	8	9	10
Age in years (x)	2	8	6	8	10	4	4	2	6	10
Maintenance cost per annum(y)	60	132	100	120	150	84	90	68	104	140

Required

- a) Using the least squares technique, calculate the values of **a** and **b** in the equation $y=a+bx$, to allow managers to predict the likely maintenance cost knowing the age of the vehicle. **8marks**
- b) Estimate the maintenance costs of a 12year old vehicle and comment on the validity of making such an estimate. **7marks**

3. Records show that 60% of students pass their examination at the first attempt. Using the normal approximation to the binomial, calculate the probability that at least 65% of a group of students will pass at the first attempt. **15marks**

4. Calculate the measure of skewness based on quartiles from the following data. **15marks**

value	10-20	20-30	30-40	40-50	50-60	60-70	70-80
frequency	358	2417	976	129	62	18	10

5. A piece of equipment will function only when all the three components A, B, C are working. The probability of A failing during one year is 0.15, that of B failing is 0.05 and that of C failing is 0.10. What is the probability that the equipment will fail before the end of the year? **15marks**

6. In two factories A and B engaged in the same industry, average weekly wages and standard deviation are as follows;

Factory	Average weekly wages (shs)	Standard deviation of wages	Number of wage earners
A	460	50	100
B	490	40	80

- Which factory shows greater variability in the distribution of wages? **5marks**
- What is the mean and standard deviation of all workers in the two factories taken together? **10marks**