

## OPEN UNIVERSITY *of* MAURITIUS

### **INSTRUCTIONS TO STUDENTS for assignments:**

Read properly the mode of submission

Please note that any assignment submitted after the deadline, marks will be deducted as per assignment submission procedure document.

Format: Please follow the guidelines in the document “Guide to writing assignments” available on Moodle.

You are required to conform to Harvard referencing style.

Please include a bibliography at the end of your document.

Plagiarism/collusion will be heavily penalised and may result in non-award of marks.

### **POINTS TO REMEMBER WHEN SUBMITTING YOUR ASSIGNMENT:**

**MODE OF SUBMISSION:** Please submit a **soft copy only** by emailing your lecturer and **copy the assignment to assign@open.ac.mu** by or before due date. for ( BSc Mgt general students **qmgau2020@gmail.com**) , (BSc Mgt Specialisation students **qmsaug2020@gmail.com**)

*The current penalty is 2% per day (weekends and public holidays included) for any assignment received after the due date which the tutor will deduct from the final mark.*

The Open University of Mauritius will not hold itself responsible or liable for the non-award of marks if you fail to submit the assignment as per the required mode of submission.

Module Name: Quantitative Methods  
Lecturer's Name: **Mr JHAREE Shobhanund**  
Date of Submission: **03 October 2020**  
Total Marks: **30 marks**  
Word limit: NA

## Assignment question-Answer all questions

### Assignment [ 30 marks]

#### Question 1 [12 marks]

A list of all possible values of the discrete random variable  $X$ , together with their associated probabilities, is called a **probability distribution**. It is often helpful to show the probability distribution in a table.

Stephanie is very forgetful. Every time she logs in to her online bank she only has a 40% chance of remembering her password correctly. She is allowed 3 unsuccessful attempts on any one day and then the bank will not let her try again until the next day.

- (a) Draw a fully labelled tree diagram to illustrate this situation. [3]
- (b) Let  $X$  be the number of unsuccessful attempts Stephanie makes on any day that she tries to log in to her bank. Construct a table to show the probability distribution of  $X$ . [4]
- (c) Calculate the expected number of unsuccessful attempts made by Stephanie on any day that she tries to log in. [2]
- (d) Calculate variance of  $X$ . [3]

#### Question 2 [18 marks]

Eight friends take a picnic to a cricket match. As her contribution to the picnic, Manisha buys eight sandwiches at a supermarket. She selects the sandwiches at random from those on display. The probability that a sandwich is suitable for vegetarians is **independently** 0.3 for each sandwich. Consider a Binomial distribution.

**(a)** Find the probability that, of the eight sandwiches, the number suitable for vegetarians is:

**(i)** 2 or fewer ; [2]

**(ii)** exactly 2 ;[1]

**(iii)** more than 3. [2]

**(b)** The weights, in kilograms, of men and women have the distributions  $N(78, 7^2)$  and  $N(66, 5^2)$  respectively.

**(i)** State two theorems of Expectation and two theorems of Variance. [4]

**(ii)** The maximum load that a certain cable car can carry safely is 1200 kg. If 9 randomly chosen men and 7 randomly chosen women enter the cable car, find the probability that the cable car can operate safely. [5]

**(iii)** Find the probability that a randomly chosen woman weighs more than a randomly chosen man. [4]