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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 **qmgaug2020@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]