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**BACHELOR OF BUSINESS  
ADMINISTRATION  
(FIFTH SEMESTER)  
EXAMINATION, Dec. - Jan., 2021-22  
QUANTITATIVE TECHNIQUES  
(123)**

*[ Time : Three Hours ]*

*[ Maximum Marks : 90 ]*

*[ Minimum Pass Marks : 32 ]*

**Note : Answer all questions. All questions carry equal marks.**

1. What is Function? What is its role in Managerial Applications? Explain different types of Functions.

**OR**

Assume that for a closed economy  $E = C + I + G$  where E is total expenditure, C is expenditure on consumption of goods, I is expenditure on investment of goods and G is Government Spending. For equilibrium, we must have  $E = Y$ , where Y is the total

**P.T.O.**

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income received. If for an economy it is given that  $C = 15 + 0.90Y$ ,  $I = 20 + 0.05Y$  and  $G = 25$ , find the equilibrium values of Y, C and I.

2. Differentiate  $2x^2(5x+3)$  with respect to  $x$ .

**OR**

Find  $\frac{dy}{dx}$  when  $y = \frac{2x^2 + 3}{x}$

3. Write short notes on:

- (i) Experiment and outcome
- (ii) Mutually Exclusive versus simultaneous cases.
- (iii) Independent and Dependent Events

**OR**

In a box there are 4 red and 3 white balls. If three balls are drawn in succession randomly without replacement, what is the probability that they will be of alternate colours?

4. What is sampling? Explain the types of Non-Probability sampling with suitable examples.

**OR**

In a housing society there are 500 people. An epidemic is spreading in the locality. In order to prevent from the disease 280 people take a preventive medicine while 220 do not take. Out of 280 people who

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take medicine, 190 are found healthy while 90 are diseased. Out of 220 people who do not take medicine, 70 are found healthy while 150 are diseased. Test whether the preventive medicine is effective or not at 5% level of significance.

( $\chi_{0.05, 1df}^2 = 3.841$ )

5. Explain the process to solve Linear Programming Problems.

**or**

Maximise Z

When  $Z = 40X_1 + 35X_2$

Subject to constraint

$$2X_1 + 3X_2 \leq 60$$

$$4X_1 + 3X_2 \leq 96$$

$$X_1, X_2 \geq 0$$