



# THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2<sup>nd</sup> Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

## Backlog Arrear Examination, March 2021

### Quantitative Techniques

PCO 4409

Marks: 75

Time : 3 hours

Answer any FIVE questions

5 X 15 = 75

1. Define Statistics. State the importance and Scope of Statistics.
2. A) The following table gives indices of industrial production of registered unemployed. Calculate the value of the co-efficient of correlation.

Year	2004	2005	2006	2007	2008	2009	2010	2011
Index of Production	100	102	104	107	105	112	103	99
Number of unemployed	15	12	13	11	12	12	19	26

B) The ranking of 10 students in two subjects A and B are as follows

A	6	5	3	10	2	4	9	7	8	1
B	3	8	4	9	1	6	10	1	6	2

3. A) The following table shows the ages (X) and blood pressure (Y) of 8 persons

X	52	63	45	36	72	65	47	25
Y	62	53	51	25	79	43	60	33

Obtain the regression equation of Y on X and find the expected blood pressure of a person and is 49 years old.

B) In a correlation study the following values are obtains

	X	Y
Mean	65	67
Standard Deviation	2.5	6.5
Co-efficient of correlation	0.8	

Find the two regression equations that are associated with the above values.

4. A) Assume that a factory has two machines. Past records show that machine –I Produces 30% of the items of output and machine-II Produces 70% of the items. Further, 5% of the items produced by Machine-I were defective and only 1% produced by Machine 2 were defective. If a

defective item is drawn at random, what is the probability that the defective item was produced by machine-I or machine-II?

5. Define Probability. State and prove Bayes' theorem of probability.

6. Describe the various steps involved in testing hypothesis and types of errors in hypothesis testing.

7. To assess the significance of possible variation in performance in a certain test between the convent schools of a city, a common test was given to a number of students taken at random from the senior fifth class of each of the four schools concerned. The results are given below. Make an analysis of variance of data.

Salesman			
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
8	12	18	13
10	11	12	9
12	9	15	12
8	14	6	16
7	4	8	15