GIET UNIVERSITY, GUNUPUR – 765022

M. B. A (First Semester) Examinations, February – 2023

21MBAPC11004 – Quantitative Techniques

Time: 3 hrs   Maximum: 60 Marks

(The figures in the right hand margin indicate marks.)

PART – A   (2 x 10 = 20 Marks)

Q.1. Answer *ALL* questions

		CO #	Blooms Level
a.	A sum of money is to be distributed among A, B, C, D in the proportion of 5:2:4:3. If C gets ₹1000 more than D, what is B's share?	CO1	K3
b.	Find the value of the following integration $\int_1^4 (5x^2 - 8x + 5)dx$	CO 1	K3
c.	Using Product Rule calculate $\frac{d}{dx}(3x^2 + 2)(5x - 1)$	CO 1	K3
d.	Seats for Mathematics, Physics and Biology in a school are in the ratio 5:7:8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?	CO 1	K3
e.	What is the calculation procedure for Poisson Distribution?	CO 2	K1
f.	Write a short note on Normal Distribution.	CO 2	K2
g.	Write a short note on Karl Pearson's Skewness.	CO 3	K2
h.	Write a short note on measures of dispersion.	CO 3	K2
i.	What is correlation in statistics?	CO 4	K1
j.	Write a short note on Time Series Analysis.	CO 5	K2

PART – B   (8 x 5 = 40 Marks)

Answer *ALL* the questions

		Marks	CO #	Blooms Level
2. a. (i)	Solve the following equations (Show step-by-step Process) X - 2Y + 3Z = 9 −X + 3Y - Z = −6 2X - 5Y + 5Z = 17	8	CO 1	K3
(ii)	Examine for maximum and minimum for the function $f(x) = x^3 - 27x + 10$.			

(OR)

		Marks	CO #	Blooms Level
b.	Reet invested an amount of ₹A for 2 years at 12% compound interest and received some amount of interest. Sonali invested ₹(A + 1500) for 3 years at 8% simple interest and received same amount of interest as Reet received. Find the amount that is invested by Reet.	8	CO 1	K3
3.a. (i)	It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (a non-spam email detected as spam) is 5%. Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email? Apply Bayes' Rule.	8	CO 2	K3
(ii)	A certain disease has an incidence rate of 2%. If the false negative rate is 10% and the false positive rate is 1%, compute the probability that a			

person who tests positive actually has the disease. Apply Bayes' Rule.

(OR)

b. (i) If X is binomially distributed with 6 trials and a probability of success equal to ¼ at each attempt, what is the probability of: (a) exactly 4 successes (b) at least one success?   8   CO 2   K3

(ii) When an unbiased coin is tossed eight times what is the probability of obtaining: (a) less than 4 heads (b) more than five heads?

4.a. Calculate mode from the following using grouping and analysis table: 8   CO 3   K3

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Students	8	10	12	14	22	24	23	15	7	5

(OR)

b. Calculate mean and standard deviation from the following: 8   CO 3   K3

Marks	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75
Students	22	14	10	12	18	13	15	25	5	6

5.a. Calculate Karl Pearson's Coefficient of Correlation from the following data taking actual mean for both X and Y   8   CO 4   K3

X	100	115	120	112	118	122	125	126	114	108
Y	140	142	145	138	152	144	132	165	155	127

(OR)

b. The following table shows the ages (X) and Blood Pressure (Y) of 8 Persons.   8   CO 4   K3

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

Obtain

   i.   Regression equation of X on Y
  ii.   Regression equation of Y on X

6.a. Fit a straight line trend for the following series. Estimate the value for the year 2023.   8   CO 5   K3

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Earnings (in lakhs)	56	65	72	81	66	68	59	75	58

(OR)

b. Briefly explain smoothing methods of time series for effective forecasting.   8   CO 5   K2

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