QP CODE: D2BST2502	(Pages: 2)	Reg. No : .....
		Name : .....

SECOND SEMESTER FYUGP EXAMINATION, APRIL 2026

(Regular/Improvement/Supplementary)

Discipline Specific Core (DSC) Courses - Minor

STA2MN103 : Regression and Probability Theory

(Credits: 4)

Time: 2 Hours **Maximum Marks: 70**

Section A

Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

1.	Define standard deviation and state its uses.	BL1	CO1
2.	Define range. Discuss its merits and demerits.	BL1	CO1
3.	Define scatter diagram.	BL1	CO2
4.	What are the limitations of regression analysis ?	BL1	CO2
5.	Define correlation. What are the types of correlation?	BL1	CO2
6.	What is a sample point ?	BL1	CO4
7.	From a group of 15 students consisting of 10 boys and 5 girls, 4 students are selected at random. Compute the probability that the selected group contains (i) No boys. (ii) More girls than boys.	BL2	CO3
8.	Distinguish between classical and frequency definition of probability.	BL1	CO3
9.	State multiplication theorem of probability.	BL1	CO3
10.	Define conditional probability.	BL1	CO5

Section B

Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)

11.	Fluctuations in the prices of two articles A and B are given below. Find out which of the two shows greater variability. A: 18 19 16 20 24 22 25 23 28 26 29 B: 15 13 42 12 45 14 46 13 56 25 35	BL3	CO1
12.	Show that correlation coefficient lies in between -1 and +1.	BL1	CO2

(PTO)

13.	Compute coefficient of Quartile Deviation from the following data. Marks: 25 35 45 55 65 75 No of students: 10 14 16 8 8 4	BL2	CO1
14.	Certain X and Y series are correlated. The two regression lines for these variables are $5x - 6y + 90 = 0$ and $15x - 8y - 130 = 0$. Find the means of the two series and correlation coefficient.	BL3	CO2
15.	(i) State addition theorem of probability. (ii) An integer is chosen at random from two hundred digits. What is the probability that the integer is divisible by 6 or 9?	BL2	CO3
16.	Define the following (i) Random experiment (iii) Mutually exclusive events (ii) Exhaustive events	BL1	CO3
17.	Let S = { a , b , c , d } be an equi probable space and consider the events A = {a , b } , B = { b , d } , C = { a , d }. Show that A, B , C are pair wise independent but they are not total independent.	BL1	CO5
18.	Two candidates A and B appear in an interview for two vacancies in the same post. The probability of A's selection is 1/7 and that of B's selection is 1/5. What is the probability that (i) Both of them will be selected. (iii) None of them will be selected. (ii) Only one of them will be selected.	BL2	CO5
	Section C		
	Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)		
19.	The following table gives the aptitude test scores and productivity indices of 8 workers selected at random : Aptitude score : 48 42 36 38 49 46 39 45 Productivity index : 39 46 33 37 45 41 35 42 Calculate the two regression equations and estimate the productivity index of a worker whose test score is 55.	BL3	CO2
20.	(i) State Bayes' theorem. (ii) The contents of urns I, II and III are as follows : Urn I : 1 white ball 2 black balls 3 red balls Urn II : 2 white balls 1 black ball 1 red ball Urn III : 4 white balls 5 black balls 3 red balls One urn is chosen at random and two balls drawn from it. They happen to be white and red. What is the probability that they come from urns I?	BL3	CO5

CO : Course Outcome ; BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)