Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – May / June 2026

Date: 22-05-2026 **Time:** 09:30am – 12:30pm

School: SOC	**Program:** BBA/BAV/BBD/BBB	
Course Code: MAT1701	**Course Name:** Business Application of Statistics	
Semester: II	**Max Marks:** 100	**Weightage:** 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5	CO6
Marks	14	14	14	22	22	14

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

(iii) Statistical tables required for calculations shall be provided along with the question paper.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M = 20M**

1	Write the difference between Descriptive and Inferential Statistics?	2 Marks	L2	CO1
2	Define ordinal data and nominal data with examples?	2 Marks	L1	CO1
3	What is the difference between a population and a sample?	2 Marks	L2	CO2
4	What is the difference between Systematic Sampling and Stratified Sampling?	2 Marks	L2	CO2
5	State any two properties of correlation?	2 Marks	L1	CO3
6	What is prediction in regression?	2 Marks	L1	CO3
7	A box of candies has many different colors in it. There is a 15% chance of getting a pink candy. What is the probability that exactly 4 candies in a box are pink out of 10 using binomial distribution?	2 Marks	L2	CO4
8	Define the Central Limit Theorem?	2 Marks	L1	CO5
9	A manager wants to summarize region wise total sales quickly. Would you use Excel or R? Give one reason?	2 Marks	L2	CO6
10	State one business function (Finance or Marketing) where R is preferred over Excel and why?	2 Marks	L2	CO6

Part B

Answer the Questions. **Total Marks 80M**

11	Classify cross-sectional and time series data and apply them to suitable real-world situations by illustrating their use in business decision-making.	10 Marks	L3	CO1
	Or			
12	A researcher plans to conduct a survey for a new product. (i) Select and apply appropriate probability and non-probability sampling methods. (ii) Demonstrate how these methods would be implemented. (iii) Justify your choice of methods.	10 Marks	L3	CO1

13	Quick Kart Supermarket is a growing retail chain located in a metropolitan city. The management aims to enhance customer experience and increase overall sales. To achieve this, they collect data from 250 customers through membership forms, purchase history, and feedback surveys. The collected data includes information such as age, gender, monthly spending, preferred product categories, and visit frequency. Based on this case, answer the following: (i) Construct a customer profile using relevant variables (ii) Classify and apply appropriate data types (iii) Use suitable statistical methods and graphical tools to summarize the data (iv) Analyze and apply findings to improve sales and customer satisfaction.	10 Marks	L3	CO2
	Or			
14	Bansal Ltd. is a consumer goods company operating in multiple regions. To monitor sales activities and improve decision-making, the management decided to design a Sales Performance Dashboard using sales data collected over the year. Based on this scenario, answer the following questions: (i) Design a sales performance dashboard by selecting appropriate metrics (ii) Apply suitable charts and data types (iii) Analyze the dashboard to extract insights (iv) Recommend business decisions based on the analysis.	10 Marks	L3	CO2

15	A company wants to study the relationship between the years of experience (X) and the monthly salary (Y in ₹'000) of its employees. Data for 6 employees: Experience (years): 2, 4, 5, 7, 8, 10	10 Marks	L3	CO3

		Salary (₹'000)	25	35	40	50	55	65			
	(a) Draw a scatter diagram (description/interpretation). (b) Compute Karl Pearson's correlation coefficient. (c) Obtain the regression line of Y on X and estimate the salary of an employee with 6 years of experience.									
	Or									
16	Apply Karl Pearson's correlation to interpret the relationship between two variables and analyze the significance of its sign and magnitude. Calculate the coefficient of correlation from the following data of two variables X (advertising expenditure in ₹ 1000) and Y (sales in ₹'lakhs):								10 Marks	L3	CO3
		Expenditure	5	6	7	8	9	10	11		
		Sales	4	5	6	8	9	11	13		
	Interpret the result.										

17	Apply data visualization techniques using Excel and R to a business scenario. Select appropriate charts, generate insights, and justify which tool is more suitable.	10 Marks	L3	CO6
	Or			
18	The marks obtained by students are assumed to follow a normal distribution with: Mean $\mu = 50$, Standard deviation $\sigma = 10$ Find the probability that a student scores less than 60. (a) Solve the problem manually using the normal distribution formula. (b) Solve the same problem using R programming.	10 Marks	L3	CO6

19	a	A university bought 45%, 25% and 30% of computers from HCL, Wipro and IBM respectively. Suppose that 2% of the computers from HCL, 3% of the computers from Wipro and 1% of the computers from IBM are found to be defective. Given a randomly chosen computer is defective, find the probability that it is made by (i) HCL (ii) Wipro?	10 Marks	L3	CO4
	b	In a class of 50 students, 28 opted for NCC, 30 opted for NSS and 18 opted for both NCC and NSS. One of the students is selected at random. Compute the probability that (i) The student opted for NCC but not NSS. (ii) The student opted for NSS but not NCC. (iii) The student opted for exactly one of them.	10 Marks	L3	CO4
		Or			
20	a	Salaries of employees of a certain organization are normally distributed with a mean of 7 LPA and standard deviation of 3 LPA. What is the probability that, for a randomly selected employee of this organization, the salary would be	10 Marks	L3	CO4

		(a) at least 5 LPA (b) at most 5 LPA (c) between 6 and 8 LPA.			
	b	Assuming that it is true that 3 in 10 industrial accidents are due to fatigue, find the probability that: (i) Exactly 3 of 7 industrial accidents will be due to fatigue. (ii) At least 3 of the 7 industrial accidents will be due to fatigue. (iii) At most 3 out of 7 industrial accidents will be due to fatigue (iv) none of the 7 accidents are due to fatigue (v) all the 7 accidents are due to fatigue.	10 Marks	L3	CO4

21	a	A random sample of 50 males showed a mean average daily intake of dairy products equal to 756 grams with a standard deviation of 35 grams. Find the 95% and 99% confidence interval for the population mean μ.	10 Marks	L3	CO5
	b	The length of life X of certain computers is approximately normally distributed with mean μ and standard deviation σ=40 hours. If a random sample of 30 computers has an average life of 788 hours, test the null hypothesis that μ=800 hours against the alternative hypothesis at (a) 1% (b) 5% and (c) 10% level of significance. (Use two-tailed test)	10 Marks	L3	CO5
Or					
22	a	A producer of 'gutkha' claims that the average nicotine content in his product is 1.83 mg. Test whether this claim can be accepted if a random sample of 8 'gutkha' packets has nicotine contents of 2.0, 1.7, 2.1, 1.9, 2.2, 2.1, 2.0, and 1.6 mg. Test against the alternative hypothesis that the average nicotine content is more than 1.83 mg.	10 Marks	L3	CO5
	b	In a test given to two group of students drawn from two normal populations, the marks obtained were as follows: Group A: 18, 20, 36, 50, 49, 36, 34, 49, 41 Group B: 29, 28, 26, 35, 30, 44, 46, -, - Examine whether the two populations have the same variance using an F-test at the 5% level of significance, given that the degrees of freedom are 8 and 7.	10 Marks	L3	CO5