Total Marks 80

NB

- 1) Question **number 1** is compulsory
- 2) Attempt **any three** out of the remaining **five questions**.
- 3) Assume suitable data if **necessary** and justify the assumptions.
- 4) Figures to the **right** indicate full marks

Q1

a) Explain Bar chart with following example:

Ex. The following table shows the number of books of different subject in library.

(3 Hours

Subject	Phy.	Chem.	Bio.	Hist.	Gio.	Eng.	Math.	Comp
No. of Books	100	125	75	75	50	200	250	175

- b) Equations of the two lines of regression are: x + 6y = 6 and 3x + 2y = 10Find :
 - i) (mean of x and mean of y
 - ii) \bigwedge^{V} regression coefficients b_{yx} and b_{xy}
 - iii) Correlation coefficient between x and y
 - e) In a certain trivariate distribution: $r_{12} = 0.7$, $r_{23} = r_{31} = 0.6$ find The partial correlation coefficient $r_{12.3}$

A survey conducted over the last 25 years indicated that in 10 years the winter was mild, in 8 years it was cold and in the remaining 7 years it was very cold. A company sells 1000 woollen coats in a mild year, 1300 in a cold year and 2000 in a very cold year. You are required to find the yearly expected profit of the company if a woollen coat costs Rs. 1730 and it is sold to stores for Rs. 2480.

- **Q2** a) Define the term "Statistics" and discuss its use in business and trade. Also **10** point out its limitations.
 - b) What are the various methods of collecting statistical data? Which of these **10** is most reliable and why?
 - Age of 20-25 25-30 30-35 35-40 40-45 45-50 50-55 55-60 Workers No. of 120 125 175 160 150 140 100 30 Workers

Find the Mean Deviation From the Median for the following data

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a)

A survey of 370 students from Commerce Faculty and 130 students from 10 Science Faculty revealed that 180 students were studying for only C.A. Examinations, 140 for only Costing Examinations and 80 for both C.A. and Costing Examinations. The rest had offered part-time Management Courses. Of those studying for Costing only, 13 were girls and 90 boys belonged to Commerce Faculty. Out of 80 studying for both C.A. and Costing, 72 were from Commerce Faculty amongst which 70 were boys. Amongst those who offered part-time Management Courses, 50 boys were from Science Faculty and 30 boys and 10 girls from Commerce Faculty. In all there were 110 boys

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in Science Faculty. Present the above information in a tabular form. Find the number of students from Science Faculty studying for part-time Management Courses.

Q4 a) A departmental store gives in-service training to its salesmen which is 10 followed by a test. It is considering whether it should terminate the service of any salesman who does not do well in the test. The following data give the test scores and sales made by nine salesmen during a certain period :

Test scores	14	19	24	21	26	22	15	20	19
Sales ('000 Rs.)	31	36	48	37	50	45	33	41	39

Calculate the coefficient of correlation between the test scores and the sales. Does it indicate that the termination of services of low test scores is justified? If the firm wants a minimum sales volume of Rs. 30,000, what is the minimum test score that will ensure continuation of service ? Also estimate the most probable sales volume of a salesman making a score of 28.

	b)	Define a	a random variable and its mathematical expectation.	10
Q5	a)	Write a	detailed note on least square regression.	10
	b)	What ar	e the test of skewness?	210
Q6				
	a)	Explain	the following point Estimation Properties with Example	10
		i)	Consistency	
		ii)	Unbiasedness	
	b)	What is	Hypothesis testing? For large samples explain	10
		i)	Test of significance for a single mean	
		ii)	Test of significance of difference between two means	

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