Exam. Code : 108501
Subject Code : 2783

B.Com. Ist Semester
BUSINESS STATISTICS
Paper—BCG-106

Time Allowed—3 Hours]   [Maximum Marks—50

Note :— (1) **Section A** contains **TWELVE** short answer type parts. Attempt any **TEN** parts. Each part carries **1** mark.

(2) **Sections B & C** contain **FOUR** questions each. Attempt any **TWO** questions from each section. Each question carries **10** marks.

SECTION—A

1. Write a short note on the following :

(i) Define Karl Pearson's coefficient of correlation. What is it intended to measure ?

(ii) Comment on the following : "Regression equations are irreversible".

(iii) Distinguish between 'Fixed' and 'Chain' base indices. Give a suitable illustration to show the difference.

(iv) What is meant by Spurious or Non Sense Correlation ?

(v) Define independent events.

(vi) What do you understand by absolute and relative measures of dispersion ? Explain advantages of relative measure over the absolute measure of dispersion.

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(vii) "Statistics is the science of counting." Comment.

(viii) Write the properties of a good measure of central tendency.

(ix) What are the uses of consumer price index ?

(x) What do you mean by mutually exclusive events ?

(xi) Explain the concept of correlation between two variables.

(xii) Define Index numbers.

SECTION—B

2. Define the term "Statistics" and discuss its use in business and trade. Also point out its limitations.

3. A departmental store gives in-service training to its salesmen which is 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 score and sales made by nine salesmen during a certain period :

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

4. Following is the distribution of marks in law obtained by 50 students :

Marks (more than)	No. of students
0	50
10	46
20	40
30	20
40	10
50	3

Calculate the median marks. If 60 per cent of the students pass this test, find the minimum marks obtained by a pass candidate.

5. (a) The means of two samples of sizes 50 and 100 respectively are 54.1 and 50.3 and the standard deviations are 8 and 7. Obtain the standard deviation of the sample of size 150 obtained by combining the two samples.

(b) The average daily wage of all workers in a factory is Rs. 444. If the average daily wages paid to male and female workers are Rs. 480 and Rs. 360 respectively, find the percentage of male and female workers employed by the factory.

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SECTION—C

6. Compute price index and quantity index numbers for the year 2015 with 2010 as base year, using :

   (a) Laspeyre's Method

   (b) Passche's Method

   (c) Fisher's price and quantity index numbers

Commodity	Quantity (units)		Value (Rs)	
	2010	2015	2010	2015
A	100	150	500	900
B	80	100	320	500
C	60	72	150	360
D	30	33	360	297

7. Discuss briefly the importance of time series analysis in business and economics. What are the components of a time series ? Give an example of each component.

8. (a) If $P(A) = 0.4$, $P(B) = 0.7$ and P(at least one of A and B) = 0.8, find P(only one of A and B).

   (b) State and prove the multiplication theorem of probability. How is the result modified if the events are not independent ?

9. (a) A man is dealt 4 spade cards from an ordinary pack of 52 cards. If he is given three more cards, find the probability p that at least one of the additional cards is also a spade.

   (b) Three groups of children contain respectively 3 girls and 1 boy; 2 girls and 2 boys; 1 girl and 3 boys. One child is selected at random from each group. Show that the chance that the three selected consist of 1 girl and 2 boys is 13/22.