Roll No. .....

(07/21-II)

5373

B.C.A. EXAMINATION

(For Batch 2011 & Onwards)

(Second Semester)

COMPUTER-ORIENTED STATISTICAL METHODS

BCA-123

Time : Three Hours *Maximum Marks :* 80

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. Attempt *four* more questions selecting *one* question from each Unit.

1. Answer the following questions : 1×16=16

   (i) How many levels must there be in one independent variable for an ANOVA to be used ?

(ii) Most frequent observation in a data set is called.....

(iii) Median in set 6, 4, 2, 3, 4, 5, 5, 4 would be.....

(iv) When data is arranged, middle value in set of observations is classified as.....

(v) A coefficient of correlation is computed to be -0.95 means that ?

(vi) Test to be applied when number of observations are less than 30 and variance is not known, is said to be.....

(vii) The mean age of a group of 100 persons was found to be 32.02. Later, it was discovered that age 57 was misread as 27. Find the correct mean.

(viii) If the coefficient of variation of distribution is 50 and its SD 20, the arithmetic mean shall be.....

(ix) The harmonic mean is the.....of the arithmetic mean of the values.

Tick whether the following statements are (True *or* False) :

(x) Harmonic mean is useful when data are given in terms of rates.

(xi) If r is negative, both the variables are decreasing.

(xii) The term 'dependent' and 'independent' do not imply that there is necesarily any cause-effect relationship between the variables.

(xiii) Regression coefficients are independent of change of scale and origin.

(xiv) Before calculating the interpreting the values of r, utmost care must be exercised to see what variables are being studied.

(xv) In a positively skewed distribution, the values of mode are greater than the mean.

(xvi) In a moderately asymmetrical distribution QD < MD < SD.

Unit I

2. (a) Calculate Mode and Median of the data given below. Using them find arithmetic mean also : 8

Marks	No. of Students
10	8
20	23
30	45
40	65
50	75
60	80

(b) What do you mean by 'Central Tendency' ? What are the desirable properties for an average ? Which average possesses most of the properties ? 8

3. Define Dispersion, its significance and any *four* methods of studying variation with their merits and limitations. 16

Unit II

4. (a) (i) 15,000 students appeared for an examination. The mean marks were 49 and the standard deviation of marks was 6. Assuming the marks to be normally distributed, what population of students scored more than 55 marks ? 4

(ii) If in the same examination, grade 'A' is to be given students scoring more than 70 marks, what proportion of the students will receive Grade 'A' ? 4

(b) Find the probability that at most 5 Defective bulbs will be found in a box of 200 bulbs if it is known that 2% of such bulbs are expected to be defective use Poisson distribution and take $e^{-4} = 0.0183$. 8

5. What are the types of correlation and the following table gives indices of industrial production of reigstered unemployed. Calculate Karl Pearson's Coefficient of Correlation from the following data and interpret its value : 16

Year	Index of Production	Number of Unemployed
1991	100	15
1992	102	12
1993	104	13
1994	107	11
1995	105	12
1996	112	12
1997	103	19
1998	99	26

Unit III

6. Write is *t*-distribution ? Explain the following properties :

   (a) To Test the significance of mean of a random sample 8

   (b) Testing difference between means of the two samples. 8

7. (a) Explain the procedure for fitting the curve $Y = A + BX + CX^2$. 8

   (b) Fit a straight line to the following data : 8

X	Y
71	69
68	72
73	70
69	70
67	68
65	67
66	68
67	64

Unit IV

9. Write short notes on the following : 2×8=16

   (a) Explain the One-way Classification and ANOVA table.

   (b) Cochran Theorem and Baye's Theorem.

9. What is Forecasting Technique ? Explain clearly its steps, methods, role and limitations. 16