Roll No. ....

BCA–305(N)

B. C. A. (Third Semester)
EXAMINATION, Dec., 2013

(New Course)

Paper Fifth

ELEMENTS OF STATISTICS

Time : Three Hours]   [*Maximum Marks : 75*

Note : Section A is compulsory. Attempt any *seven* questions from Section B and any *one* question from Section C.

Section—A
(Numerical/Analytical/Problematic Questions)

1. (a) The arithmetic mean of two observations is 25 and the harmonic mean is 9, what is geometric mean of the series ?   http://csjmuonline.com   4

   (b) Write a short note on scope of Statistics.   4

2. (a) One number is drawn from numbers 30 to 100. Find the probability that it is either divisible by 2 or 5.   4

   (b) The letters of the word "TUESDAY" are arranged in a line each arrangement ending with letters S. How many different arrangements are possible ? How many of them start with letter D ?   4

R-85   P. T. O.

Section—B
(Short Answer Type Questions)

3. Find the median from the following frequency distribution :   6

Class	Frequency
3—7	8
7—15	10
15—20	12
20—30	9
30—45	6
45—50	5

4. Prove that :   6
$$P(n,r) = P(n-1,r) + r \cdot P(n-1, r-1)$$

5. (a) Calculate the harmonic mean of the following values :   3

    15, 20, 25, 30, 35, 40

   (b) The numbers 2, 4, 6, 8 and 10 have frequencies $(x+4), (x+3), (x+2), (x+1)$ and (x) respectively. If the arithmetic means is 5, find the value of x.   3

6. Find the mode for the following distribution :   6

Class Interval	Frequency
0—10	5
10—20	8
20—30	7
30—40	12
40—50	28
50—60	20
60—70	10
70—80	10

R-85

7. Calculate standard deviation and variance for the following data :   6

x	f
6	3
7	6
8	9
9	13
10	8
11	5
12	4

8. In how many ways can a cricket eleven be chosen out of a batch of 16 players if :   6

   (i) there is no restriction the selection.

   (ii) a particular player is always chosen.

   (iii) a particular player is never chosen ?

9. Three group 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 selected consist of 1 girl and 2 boys is 13/32.   6

10. We have the following data on the monthly expenditure of food (in Rupees) for 30 households in a locality :   6

115	159	196	205	212	223
256	271	310	129	335	169
184	234	245	241	265	298
144	135	172	173	229	243
220	238	278	243	220	238

R-05

P. T. O.

   (i) Obtain a frequency distribution using the following class interval 100—150, 150—200, 200—250, 250—300, 300—350.

   (ii) What percentage of households spends less than ₹ 250 per month and what percentage of households spends more than ₹ 200 per month ?

11. The average marks of 80 students were found to be 40. Later, it was discovered that a score of 54 was misread as 84. Find the corrected mean of the 80 students.   6

12. Find the mean, median and mode for the values :   6

   3, 5, 2, 6, 5, 9, 5, 2, 8, 6

Section—C

(Long Answer Type Questions)

13. (a) Explain the following with an example :   9

   (i) Mutually exclusive event

   (ii) Independent event

   (iii) Conditional probability

   (b) A and B throw alternately with a pair of ordinary dice. A wins if he throw 6 before B throw 7 and B win if he throw 7 before A wins. Show that A has choice of winning is 30/61.   8

14. Calculate mean and standard deviation for the following table giving the age distribution of 542 members :   17

Age in Years	No. of Members
20—30	3
30—40	61
40—50	132
50—60	153
60—70	140
70—80	51
80—90	2

15. (a) Calculate first (lower) and third (upper) quartile from the following :   10

Salary (₹)	No. of Employees
0—10	22
10—20	38
20—30	46
30—40	35
40—50	20

(b) If $^nP_r = 120$ and $^nC_r = 20$, find the value of r. 7

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