

Roll No.

BCA-305(N)

B. C. A. (Third Semester) EXAMINATION, Dec., 2014

(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 one question from Section C.

Section—A

(Numerical/Analytical Problematic Questions)

1. (a) Find the harmonic mean from the following observations :
2574, 475, 75, 5, 0.8, 0.08, 0.005, 0.0009
4
- (b) Find the range and coefficient of range for the following data :
4

Variable	Frequency
82	6
87	7
92	9
97	13
102	12
107	5
112	3

2. (a) Find the standard deviation and its coefficient from the following data : 4

Size	F
0—10	1
10—20	2
20—30	4
30—40	3

- (b) There are 100 cards. These cards are numbered from 1 to 100. One card is drawn at random. What is the probability that the number on the card is a square. 4

Section—B

(Short Answer Type Questions)

3. Distinguish between primary and secondary data. 6
4. Prove that : 6
- $$P(n, r) = P(n-1, r) + r P(n-1, r-1)$$
5. Compute median by using the following data : 6

Mid-value	Frequency
5	2
15	3
25	8
35	15
45	26
55	30
65	16
75	15
85	14

6. Calculate the geometric mean for the following distribution : 6

Classes	Frequency
100—200	15
200—300	18
300—400	30
400—500	20
500—600	17

7. Three horses A, B and C are in race. A is twice as likely to win as B is twice as likely to win as C. What are their respective probabilities of winning? 6
8. Convert the following frequency distribution into "less than" cumulative frequency distribution and "more than" cumulative frequency distribution : 6

Marks	Frequency
0—5	10
5—10	12
10—15	15
15—20	13
20—25	5

9. A student is trying to seek admission in either of the two colleges. The probability that he is admitted in first college is $\frac{3}{5}$ and that in second college is $\frac{1}{3}$. Find the probability that he is admitted at least one of the colleges. 6
10. A bag contains 8 balls of which 5 are red and 3 are black. Two balls are drawn at random. What is the probability that both are black? 6

11. (i) Evaluate :

3

$${}^{12}P_4, {}^{75}P_2, {}^8P_8,$$

(ii) How many words with or without meaning can be formed by using all the letters of the word DELHI, using each letter exactly once ?

3

12. The following tables gives the average daily production figure for 20 months each of 25 working days. Given that the population standard deviation of daily production is 35 units, draw a control chart for the mean :

6

210	212
205	215
210	208
212	214
211	210
209	204
219	211
204	211
212	203
209	211

Section—C

(Long Answer Types Questions)

13. A committee of 5 is to be formed out of 6 gentlemen and 4 ladies. In how many ways this can be done when :
- (a) At least 2 ladies are included ? 17
- (b) At most 2 ladies are included ?

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14. Calculate arithmetic mean, median and mode from the following table :

17

Income between (₹)	No. of Persons
100 and 200	15
100 and 300	30
100 and 400	63
100 and 500	83
100 and 600	100

15. (a) What is the probability of drawing a card of heart or an ace in a single draw from a standard pack of 52 cards ? 9
- (b) Two dice are thrown, find the probability that at least a sum of 10 occurs. 8