

**18U265**

(Pages: 2)

Name.....

Reg. No.....

**SECOND SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2019**

(Regular/Improvement/Supplementary)

(CUCBCSS – UG)

**CC15U BCA2 C03 – COMPUTER ORIENTED STATISTICAL METHODS**

Statistics - Complementary Course

(2015, 2016 Admissions - Supplementary)

Time: Three Hours

Maximum: 80 Marks

**Part - A**

Answer *all* questions. Each question carries 1 mark.

1. Correlation coefficient is lying between:  
(a)  $-\infty$  to  $+\infty$ .      (b)  $-\infty$  to  $+1$ .      (c)  $-1$  to  $+1$ .      (d)  $0$  to  $1$ .
2. Which of the following distribution is a symmetrical distribution?  
(a) Binomial      (b) Poisson      (c) Normal      (d) F
3. Two dice are rolled simultaneously. The probability of getting a sum of the numbers 10 is  
(a)  $1/12$       (b)  $1/36$       (c)  $1/18$       (d)  $1/6$
4. The range of chi– square distribution is .....  
(a)  $-\infty$  to  $+\infty$ .      (b)  $-\infty$  to  $+1$ .      (c)  $-1$  to  $+1$ .      (d)  $0$  to  $\infty$ .
5. The size of the test is called .....  
(a) P(Type II error).      (b) P(Type I error).      (c) Power.      (d) None of the above.
6. For open end classification, the best measure of central tendency is .....
7. The S.D. of sampling distribution is known as.....
8. The set of all possible values of a random experiment is called .....
9. If A and B are two independent events,  $P(A \cap B) =$  .....
10. The variance of Binomial distribution is .....

**(10 x 1 = 10 Marks)**

**Part - B**

Answer *all* questions. Each question carries 2 marks.

11. Define Lorenz curve.
12. Define axiomatic definition of probability.
13. Define chi-square distribution.
14. Distinguish between Type I and Type II errors.
15. Define mode.

**(5 x 2 =10 Marks)**

**Part - C**

Answer any *five* questions. Each question carries 4 marks.

16. Explain scatter diagram.
17. Define m.g.f. State any two of its properties.

18. Explain normal distribution and its properties.
19. Find median for the following data
- |      |       |       |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|
| 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| 5    | 8     | 7     | 12    | 28    | 20    | 10    | 10    |
20. Calculate mean deviation from mean, for the following data.
- |                 |   |      |       |       |       |       |       |       |
|-----------------|---|------|-------|-------|-------|-------|-------|-------|
| Marks           | : | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| No. of students | : | 6    | 5     | 8     | 15    | 7     | 6     | 3     |
21. Distinguish between correlation and regression.
22. Explain desirable properties of a good estimator.
23. Derive the 95% confidence interval for the proportion of Binomial population.

(5 x 4 = 20 Marks)

**Part - D**

Answer any *five* questions. Each question carries 8 marks.

24. Explain measures of central tendency.
25. Obtain the rank correlation coefficient for the following data:
- |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| X: | 68 | 64 | 75 | 50 | 64 | 80 | 75 | 40 | 55 | 64 |
| Y: | 62 | 58 | 68 | 45 | 81 | 60 | 68 | 48 | 50 | 70 |
26. From a city population. The probability of selecting, a male or a smoker is  $\frac{7}{10}$ , a male smoker is  $\frac{2}{5}$ . The probability of a male given that the person selected is smoker, is  $\frac{2}{3}$ . Find the probability of selecting a) a non-smoker b) a male and c) a smoker, if the person selected is male.
27. Obtain the regression of Y on X and X on Y from the following table and estimate the blood pressure when the age is 45.
- |                |   |     |     |     |     |     |     |     |     |     |     |     |     |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Age            | : | 56  | 42  | 72  | 36  | 63  | 47  | 55  | 49  | 38  | 42  | 68  | 60  |
| Blood pressure | : | 147 | 125 | 160 | 118 | 149 | 128 | 150 | 145 | 115 | 140 | 152 | 155 |
28. Explain measures of dispersion.
29. Given that X is a normal variate with mean 30 and S. D. is 5. Find the probability that
- i)  $26 \leq X \leq 40$       ii)  $X \geq 45$       iii)  $|X - 30| > 5$ .
30. Fit a straight line to the following data
- |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|
| X: | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| Y: | 80 | 90 | 92 | 83 | 94 | 99 | 92 |
31. Given the equations of two regression lines,  $8x - 10y + 66 = 0$  and  $40x - 18y - 214 = 0$
- a) Identify the regression lines of X on Y and Y on X
- b) Obtain regression coefficient and the correlation coefficient.
- c) Find the mean of X and the mean of Y
- d) Given the standard deviation of X = 4, find the S.D of Y

(5 x 8 = 40 Marks)

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