

16U230

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Name.....

Reg. No.....

SECOND SEMESTER B.C.A. DEGREE EXTERNAL EXAMINATION, MAY-2017
(Regular/Supplementary/Improvement)

(CUCBCSS – UG)

CC15U BCA2 C03 - COMPUTER ORIENTED STATISTICAL METHODS

(Complementary Course)

(2015 Admission Onwards)

Time: Three Hours

Maximum: 80 Marks

Part A

Answer all questions.

1. The data set -2,-1,0,1,2 is
 - a) positively skewed
 - b) negatively skewed
 - c) symmetric
 - d) none of this
2. The two lines of regression become identical when
 - a) $r=1$
 - b) $r=-1$
 - c) $r=0$
 - d) a and b.
3. If X is a discrete random variable, then X^2 is
 - a) a continuous random variable
 - b) a discrete random variable
 - c) not a random variable
 - d) none of these.
4. The probability for a randomly chosen month to have its 10th day as Sunday is
 - a) 1/84
 - b) 1/12
 - c) 10/84
 - d) 1/7
5. If F(x) is the d.f of a random variable, then $F(+\infty)$ is
 - a) 0
 - b) 1
 - c) $+\infty$
 - d) 1/2.
6. The variance of a binomial distribution is
 - a) np
 - b) npq
 - c) 2npq
 - d) npq(q-p)
7. For any finite real numbers a and b, $E(X-a) = b$, then
 - a) $E(X)=b-a$
 - b) $E(X)= a-b$
 - c) $E(X)= b$
 - d) $E(X) =a+b$
8. The variance of a standard normal distribution is
 - a) 0
 - b) 2
 - c) 1
 - d) none of the above.
9. Sample mean \bar{X} as an estimate of population mean μ is
 - a) unbiased
 - b) consistent
 - c) sufficient
 - d) all of above.
10. The moment estimate of σ^2 is
 - a) nS^2
 - b) μ^2
 - c) S^2
 - d) $\sigma^2 + \mu^2$

(10 x 1 = 10 marks)

Part B

Answer all questions.

11. Differentiate between correlation and regression.
12. What is meant by rank correlation. What is its merit?
13. Define type I error and power.
14. Distinguish between estimator and estimate.
15. Define skewness and kurtosis. (5 x 2 = 10 marks)

Part C

Answer any five questions.

16. The mean weight of 150 students in a class is 60 kgs. The mean weight of boys in the class is 70 kgs and that of girls is 55 kgs. Find the no. of boys and girls in the class.
17. The mean of a binomial distribution is 4 and variance is 2. Find $P(X=0)$, and the middle Term or terms.
18. Obtain the mean and variance of Poisson distribution with parameter μ .
19. Obtain the m.g.f of a uniform distribution in $(0,1)$.
20. Define pair wise and mutual independence of events.
Show by an example that pair wise independence need not imply mutual independence.
21. For the following distribution calculate median and mode.
 $f(x) = k x(1-x), 0 \leq x \leq 1.$
22. Define a bivariate p.m.f. Define marginal and conditional p.m.fs.
23. Show that independent variables are uncorrelated but the converse need not be true. (5 x 4 = 20 marks)

Part D

Answer any five questions

24. Define a normal distribution. What are its important properties? Obtain the m.g.f.
25. If $f(x,y) = 2-x-y, 0 < x < 1, 0 < y < 1$, find the marginal distribution of X and the conditional distribution of Y/X.
26. Identify the two regression lines and hence find the value of correlation coefficient.
 $3X = 2Y + 5$ and $5X = 6Y + 7$
27. State and prove Chebychev's inequality.
28. Obtain 95% confidence limits for the proportion in a Binomial distribution.
29. Explain Principle of least squares? How do you fit a parabola to a given data?
30. A problem in Statistics is given to 3 students. Their respective chances of solving the problem are $\frac{1}{2}, \frac{1}{3}$ and $\frac{1}{5}$. Find the probability that the problem is solved. Find also the probability that exactly two of them will solve the problem.
31. For a normal distribution 34% of the observations are below 45 and 78% are below 82. Find the mean and standard deviation of the distribution. (5 x 8 = 40 marks)
