TB173210C

Reg. No: ....

Name: ....

B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2018

(2017 Admissions Regular, 2016 Admissions Supplementary/Improvement & 2015 Admissions Supplementary)

SEMESTER III – CORE COURSE (STATISTICS)

CAS3B03TB – PROBABILITY DISTRIBUTIONS

(For Computer Applications)

Time: Three Hours **Maximum Marks: 80**

PART A

I Answer all questions. Each question carries 1 mark.

1. State the addition theorem on Expectation for two random variables X and Y.
2. If the moment generating function of a random variable X is $(1-t)^{-1}$, find E(X).
3. If for a binomial distribution, p = ½, then what will be the skewness of the distribution?
4. What is the distribution of the difference of two independent normal variates?
5. The area under the standard normal curve beyond the lines $z = \pm 2.58$ is _________.
6. State the Bernoulli's law of large numbers.

(6x1=6)

PART B

II Answer any seven questions. Each question carries 2 marks.

7. For any two independent random variables X and Y, show that E (XY) = E(X) E(Y).
8. A random variable X has p.d.f. $f(x) = 2^{-x}$; x = 1,2,3, . . ., find mode of the distribution.
9. A balanced die is tossed . A person receives Rs. 10/- if an even number turns up. Otherwise he loses Rs. 8/-. How much money can he expect on the average in the long run?
10. If $X \sim B(n, p)$, find Cov $\left(\frac{X}{n}, \frac{n-X}{n}\right)$.
11. Show that Geometric distribution with parameter p, satisfies 'Lack of Memory' property.
12. Find the m.g.f. of Uniform distribution over (0, 2).
13. Find the mean of Gamma distribution with parameters m and p.
14. If X ~ N(30, 5), find $P[26 < X < 40]$.
15. Two unbiased dice are tossed. If X is the sum of the numbers obtained, show that $P[|X-7| \geq 3] \leq \frac{35}{54}$.
16. State the Lindberg-Levy form of Central limit theorem.

(7x2=14)