UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – 2019

Roll No. .....

Paper: Statistics-II

Course Code: STAT-103, STT-12314 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2 Define the following: **(20)**

(i) Moment generating function

(ii) Baye's theorem

(iii) Mathematical expectation

(iv) Four properties of Normal distribution

(v) Poisson distribution

Q.3 If 3 books are picked at random from a shelf containing 6 novels, 4 poems books and a dictionary, what is the probability that **(05)**

(a) the dictionary is selected,

(b) 2 novels and 1 poem book are selected?

Q.4 The probability that a married man watches a certain T.V. show is 0.4 and the probability that his wife watches the show is 0.5. The probability that a man watches the show given that his wife does, is 0.7. Find the probability that **(05)**

(a) a wife watches the show, given that her husband does;

(b) At least one person of a married couple will watch the show.

Q.5 A continuous random variable X that can assume values between 2 and 5 has density function given by f (x) = A (1 + x) **(05)**
Find (a) A (b) median (c) $P(3 \le X < 4)$

Q.6 The IQs of 1000 applicant to a certain college are approximately normally distributed with a mean of 110 and a standard deviation of 15. If the college required an IQ of at least 95, how many of these students will be rejected on this basis? **(05)**

Q.7 Derive Mean-deviation about median for normal distribution (μ, σ). **(05)**

Q.8 For a Poisson distribution P (X = 1) = 0.3650 and P (X = 2) = 0.1606 find P (X = 3) **(05)**

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – 2019

Paper: Statistics-II

Course Code: STAT-103, STT-12314 Part – I (Compulsory) Time: 15 Min. Marks: 10

Roll No. in Fig. .....

Roll No. in Words. .....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)

Q.1 Encircle the correct answer in the following. **(10)**

I. The joint probability of two dependent events A and B is:
(a) $P(A)+P(B)-P(A\cap B)$ (b) $P(A)P(B)$
(c) $P(A)P(B/A)$ (d) $P(A)+P(B)$

II. **$P(A)=0.65$ $P(B)=0.45$, which of the following statements is true**
(a) A and B are dependent (b) A and B are mutually exclusive
(c) A and B are not mutually exclusive (d) A and B are independent

III. If X and Y are two independent variables, then Var (X-Y) is equal to
(a) Var (X) - Var (Y) (b) Var (X) + Var (Y) – 2 cov (X, Y)
(c) Var (X) + Var (Y) (d) None of above

IV. The Cumulative distribution fuction of a random variable X denoted by F (a) is defined as
(a) $F(a)=P(X\leq a)$ (b) $F(a)=P(X\geq a)$
(c) $F(a)=P(X=x)$ (d) None of above.

V. For binomial distribution b (x; 12, 0.6), the mean is:
(a) *6* (b) *7.2*
(c) *2.88* (d) *1.70*

VI. A binomial distribution may be approximated by a Poisson distribution when:
(a) n is large and P is small (b) n is small and P is large
(c) Both n and P are small (d) Both n and P are large

VII. Variance of a hyper geometric distribution , h (x; N, n, K) is:
(a) nP (b) nPq
(c) $nPq\left(\frac{N-n}{N-1}\right)$ (d) None of these

Where $P=\frac{K}{N}$, $P+q=1$

VIII. A continuous probability distribution is not represented by:
(a) A graph (b) A table
(c) A Mathematical function (d) A density function

IX. For a normal distribution with mean 40 and variance 10, how much area will be scanned to left of X = 40
(a) 0.65 (b) 0.5
(c) 0.95 (d) Zero

X. In a normal distribution $N(\mu,\sigma)$ Quartile deviation is equal to:
(a) $\frac{4}{5}\sigma$ (b) $\frac{2}{3}\sigma$
(c) 2σ (d) 0.95σ