1511E1262

Candidate's Seat No : _____

B.Sc. (NEP) Sem.-5 Examination

DSC-M-354

Statistics

Time : 2-00 Hours] November-2025 [Max. Marks : 50

Instructions: 1. Figures to the right indicate full marks of respective questions.
2. Use of a Scientific Calculator is allowed.

Q.1. A	Derive mean and variance of Normal Distribution	**06**
	Attempt Any Two.	
B	(1) Draw the figure of normal curve and show Mean, Median and Mode on it. (2) Draw the figure of standard normal distribution curve and shade the area between -0.3 and 0.7. **(3)** What can you say about the location of quartiles in case of normal distribution with two parameters? Locket on curve.	**04**
	OR	
A	Explain the Characteristics and use of Standard Normal variate.	**06**
B	In usual notation for normal distribution prove the following results. (1) $F(-Z) = 1-F(Z)$ (2) $P(A<X<B) = F(B)-F(A)$	**04**
Q.2. A	Define Truncated Distribution. Obtain mean and variance of truncated Binomial Distribution truncated at 0	**06**
	Attempt Any Two.	
B	(1) Explain truncated above and truncated below. (2) Write the formula for recurrent relation to calculate binomial probabilities. **(3)** Write the formula for recurrent relation to calculate Poisson probabilities.	**04**
	OR	
A	Obtain mean and variance of truncated Poisson distribution truncated at 0.	**06**
	Write the mean and variance of	
B	(1) Truncated Binomial distribution which is truncated at 0 (2) Truncated Poisson distribution which is truncated at 0	**04**
Q.3. A	Write a short note on scatter diagram.	**06**
	Attempt Any Two	
B	(1) What is the change of origine and scale on correlation coefficient? (2) Explain perfect correlation. **(3)** Two independent variables are uncorrelated but two uncorrelated variables are not independent. (T/F)	**04**
	OR	
A	Show that correlation coefficient is independent of change of origine and scale.	**06**
B	Show that the range of Karl Pearson correlation coefficient is -1 to +1	**04**
Q.4. A	Obtain the equation for the line of regression of Y on X.	**06**
	Attempt Any Two	
B	(1) What can you say about the sign of correlation coefficient and regression coefficient? Explain. (2) What is the relation between two regression coefficients and correlation coefficient? **(3)** If one of the regression coefficient is greater then one the what can you say about the other regression coefficient?	**04**
	OR	

A	Show that regression coefficient is independent of change of origine but not scale.	**06**
B	Show that correlation coefficient is geometric mean of two regression coefficients	**04**

Q. 5 Attempt **Any Five**.

(i) Comment on: if correlation coefficient is 0 then x and y are independent.

(ii) What can you say about the sign of two regression coefficients and correlation coefficient? Explain.

(iii) Write the equations of two lines of regression.

(iv) In a bivariate regression, byx = 1/5, bxy = 10. Comment on it.

(v) The regression coefficient of Y on X 1s. 3·2; and that of X on Y is 0·8. Comment on it. **10**

(vi) For the continuous random variable X which follows normal distribution with mean μ= 4.0 sec. and variance σ = 0.4 sec. find the corresponding z score for X = 4.0 sec and X = 3.6 sec.

(vii) For the continuous random variable X which follows normal distribution with mean μ= 4.0 sec. and variance σ = 0.4 sec. find the corresponding X score for Z = -2.32 and Z = 1.97.

End of Paper