Bernoulli

SYLHET CADET COLLEGE

PROGRESS TEST EXAMINATION - 2025

CLASS: XII

MULTIPLE CHOICE QUESTIONS

STATISTICS

SECOND PAPER

[According to the Syllabus of 2025]

TIME - 25 minutes

FULL MARKS - 25

Ques Setter	
Moderator	
VP	

Subject Code: 1

3 0

Set:

[N.B. – Answer all the questions. Each question carries ONE mark. Block fully, with a black ball-point pen, the circle of the letter that stands for the correct/best answer in the "Answer sheet" for the Multiple Choice Questions Examination.

Candidates are asked not to leave any mark or spot on the question paper.

- 1. If n in $P_n = P_o(1+r)^n$ is split into infinite parts and r adjusted accordingly, what type of growth do we have?
 - (a) Simple growth
- (b) Arithmetic growth (c) Exponential growth (d) Geometric growth
- 2. The dependency ratio of a town is 0.60. If there are 40,000 people aged 15–64, how many individuals are considered dependents?
 - (a) 22,000
- (b) 26,500
- (c) 24,000
- (d) 25,000

- 3. E(4x+2Y) = ?
 - (a) E(X) E(Y)
- (b) 4E(X) + 2E(Y)
- (c) 2E(X) + 4E(Y)
- (d) $E(X) \times E(Y)$

Answer the next THREE questions based on the following information

$$\begin{array}{c|c|c|c|c} X & 1 & 2 & 3 \\ \hline P(x) & \frac{1}{6} & \frac{1}{2} & \frac{1}{3} \end{array}$$

- 4. What is the value of E(X)?
 - (a) 2.00
- (b) 2.17
- (c) 2.33
- (d) 2.50

- 5. What is the value of $E(X^2)$?
 - (a) 5.17
- (b) 4.83
- (c) 5.00
- (d) 5.33

- 6. What is V(3X)?
 - (a) 9.67
- (b) 11.33
- (c) 12.67
- (d) 4.25

- 7. If $E(X^2) = 45$ and V(X) = 21, what is E(X)?
 - (a) $4\sqrt{3}$
- (b) $2\sqrt{6}$
- (c) $6\sqrt{2}$
- (d) $7\sqrt{2}$
- 8. What is the Standard Deviation of Binomial Distribution?
 - (a) np
- (b) npq
- (c) nq
- (d) \sqrt{npq}
- 9. In a binomial distribution with p = 0.5 and P(2) = 0.1093, what is n?
 - (a) 15
- (b) 1
- (c) 8
- 10. Consider a binomial experiment. Which of the following statements is/are true?
 - i. Each trial results in exactly one of two possible outcomes.
 - ii. The expected value is always greater than the variance.
 - iii. The probability mass function of a binomial distribution can be computed using the binomial formula.

Which one is correct?

- (a) i and ii
- (b) i and iii
- (c) ii and iii
- (d) i, ii and iii

Answer the next THREE questions based on the following information

The mean of a Binomila distribution is 40 and standard deviation 6.

(a) 200	(b) 300	(c) 400	(d) 500
What is the value of	1 - q?		
(a) 0.5	(b) 0.2	(c) 0.3	(d) 0.1
What is the value of	$P(X \le 40)$?		
(a) 0.52	(b) 0.54	(c) 0.45	(d) 0.91
Which one is true of	the parameter (m) of	f Poisson Distribution	?
(a) $m = 0$	(b) $m < 0$	(c) $m > 0$	(d) $m = 1$
For a Poisson variate	P(2) = P(3), wh	at is the variance?	
(a) 3	(b) 4	(c) 5	(d) 6
		<u>-</u>	, , , , , , , , , , , , , , , , , , , ,
(a) $\frac{1}{3}$	(b) $\frac{3}{4}$	(c) $\frac{4}{10}$	(d) $\frac{1}{2}$
Let $S = \{1, 2, 3, \dots, 10\}$	}. Which of the follow	ving pairs of events are	e disjoint?
(a) A : Multiples of 3, E	3: Multiples of 5		
(b) A: Prime numbers,	B: Even numbers greater	r than 2	
	an 4, B: Numbers greater	than 6	
(d) All of the above			
		day next week. Wha	t is the probability that it
(a) $\frac{1}{6}$	(b) $\frac{1}{36}$	(c) $\frac{5}{6}$	(d) $\frac{1}{17}$
If $P(A) = 0.2$, $P(B) =$	0.3, and $P(A \cup B) = 0.4$	4, what is $P(A \cap B)$?	
(a) 0.9	(b) 0.2	(c) 0.3	(d) 0.1
If two fair coins are	tossed together, what	is the probability of g	getting at least one head?
(a) $\frac{1}{2}$	(b) $\frac{1}{3}$	(c) $\frac{3}{4}$	(d) $\frac{1}{4}$
		times a 6 appears is	denoted by X . How many
(a) 1	(b) 2	(c) 3	(d) 4
For a continuous ran	\mathbf{dom} variable X with X	$\mathbf{PDF}\ f(x) = k(2-x)\ \mathbf{de}$	efined on $0 \le x \le 2$:
i. The value of k is 1. ii. The cumulative distribition iii. $P(1 < X < 2) = \frac{3}{8}$	ribution function $F(x) = \frac{1}{2}$		efined on $0 \le x \le 2$:
i. The value of k is 1. ii. The cumulative distriii. $P(1 < X < 2) = \frac{3}{8}$ Which one is correct	ribution function $F(x) = \frac{1}{x^2}$	$x - \frac{x^2}{4}$ for $0 \le x \le 2$.	
i. The value of k is 1. ii. The cumulative distribition iii. $P(1 < X < 2) = \frac{3}{8}$ Which one is correct (a) i	ribution function $F(x) = \frac{1}{x^2}$. (b) i and ii	$x - \frac{x^2}{4}$ for $0 \le x \le 2$.	(d) i, ii and iii
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i. The value of k is 1. ii. The cumulative distriii. $P(1 < X < 2) = \frac{3}{8}$ Which one is correct (a) i Answer the next thr What is the value of (a) $\frac{1}{3}$	ribution function $F(x) = \frac{1}{2}$? (b) i and ii ee questions based on $\frac{X \mid 0}{P(X) \mid \frac{1}{4}}$? m?	$x - \frac{x^2}{4}$ for $0 \le x \le 2$. (c) ii the following information $\begin{vmatrix} 1 & 2 & 3 \\ \hline & m & \frac{1}{3} & \frac{1}{6} \end{vmatrix}$	(d) i, ii and iii tion
i. The value of k is 1. ii. The cumulative distriii. $P(1 < X < 2) = \frac{3}{8}$ Which one is correct (a) i Answer the next thr What is the value of (a) $\frac{1}{3}$ Find $F(2)$.	ribution function $F(x) = \frac{1}{2}$? (b) i and ii ee questions based on $\frac{X}{P(X)} = \frac{1}{4}$? m? (b) $\frac{5}{12}$	$x - \frac{x^2}{4} \text{ for } 0 \le x \le 2.$ (c) ii the following information $ $	(d) i, ii and iii tion (d) $\frac{1}{6}$
	What is the value of (a) 0.5 What is the value of (a) 0.52 Which one is true of (a) $m = 0$ For a Poisson variate (a) 3 A number is random probability that the 10 integers? (a) $\frac{1}{3}$ Let $S = \{1, 2, 3,, 10\}$ (a) A: Multiples of 3, E (b) A: Prime numbers, (c) A: Numbers less that (d) All of the above The probability of rawill rain on both Mo (a) $\frac{1}{6}$ If $P(A) = 0.2$, $P(B) = (a) 0.9$ If two fair coins are $(a) \frac{1}{2}$ A die is thrown thrippossible values can $(a) \frac{1}{2}$	What is the value of $1-q$? (a) 0.5 (b) 0.2 What is the value of $P(X \le 40)$? (a) 0.52 (b) 0.54 Which one is true of the parameter (m) of (a) $m=0$ (b) $m<0$ For a Poisson variate X , if $P(2)=P(3)$, where $P(3)=P(3)$, where $P(3)=P(3)=P(3)$, where $P(3)=P(3)=P(3)=P(3)=P(3)=P(3)=P(3)=P(3)=$	What is the value of $1-q$? (a) 0.5 (b) 0.2 (c) 0.3 What is the value of $P(X \le 40)$? (a) 0.52 (b) 0.54 (c) 0.45 Which one is true of the parameter (m) of Poisson Distribution (a) $m=0$ (b) $m<0$ (c) $m>0$ For a Poisson variate X , if $P(2)=P(3)$, what is the variance? (a) 3 (b) 4 (c) 5 A number is randomly chosen from a list of 10 consecutive posprobability that the number selected is greater than the average 10 integers? (a) $\frac{1}{3}$ (b) $\frac{3}{4}$ (c) $\frac{4}{10}$ Let $S=\{1,2,3,\ldots,10\}$. Which of the following pairs of events are (a) A : Multiples of 3 , B : Multiples of 5 (b) A : Prime numbers, B : Even numbers greater than 2 (c) A : Numbers less than A , A : Numbers greater than A (d) All of the above The probability of rain is $\frac{1}{6}$ for any given day next week. What will rain on both Monday and Tuesday? (a) $\frac{1}{6}$ (b) $\frac{1}{36}$ (c) $\frac{5}{6}$ If $P(A) = 0.2$, $P(B) = 0.3$, and $P(A \cup B) = 0.4$, what is $P(A \cap B)$? (a) 0.9 (b) 0.2 (c) 0.3 If two fair coins are tossed together, what is the probability of a (a) a (b) a (c) a (d) a (d) a (e) a (f) a (

11. What is the value of n?