

SYLHET CADET COLLEGE

TEST EXAMINATION - 2025

CLASS: XII

MULTIPLE CHOICE QUESTIONS

STATISTICS SECOND PAPER

TIME – 25 minutes

FULL MARKS – 25

Set	A
-----	---

Subject Code:	1	3	0
---------------	---	---	---

[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 a population exponentially declines, when is it reduced to half?
(a) $\frac{\log_{10} 2}{r}$ (b) $\frac{\log_e 2}{r}$ (c) $\frac{\log_e 2}{r^2}$ (d) $\frac{\log_e 3}{r}$
2. Vital statistics records –
i. marriage
ii. birth
iii. sickness and death
Which one is correct?
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii
3. Total number of children born to each 1000 people in any country or region is called –
(a) TFR (b) GFR (c) CBR (d) GRR
4. $f(x) = 3x; 0 < X < 2$; What is $F(2)$?
(a) 6 (b) 3 (c) 1 (d) 0
5. A coin is flipped twice. What is the probability of getting heads first and tails second?
(a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{4}$
6. Tossing a die r times generates how many outcomes?
(a) $6 \times r$ (b) r^6 (c) 6^r (d) 2^r
7. A survey shows that 5 out of every 200 customers in a store pay with cash. If a customer is picked randomly, what is the probability that they pay using another method?
(a) 0.050 (b) 0.500 (c) 0.975 (d) 0.025
8. If $E(X^2) = 45$ and $V(X) = 21$, what is $E(X)$?
(a) $4\sqrt{3}$ (b) $5\sqrt{2}$ (c) $6\sqrt{2}$ (d) $7\sqrt{2}$
9. In a binomial distribution with $p = 0.6$ and $P(x) = 0.7682$, $n =$?
(a) 3 (b) 9 (c) 10 (d) 14
10. For a Poisson-distributed variable with mean $m = 4$, which of the following is true?
i. $E(X) = 4$
ii. $V(X) = 2$
iii. $E(X^2) = 18$
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
- | | | | | |
|------|---------------|---|---------------|---------------|
| X | 0 | 1 | 2 | 3 |
| P(X) | $\frac{1}{4}$ | m | $\frac{1}{3}$ | $\frac{1}{6}$ |
11. What is the value of m?
(a) $\frac{1}{3}$ (b) $\frac{5}{12}$ (c) $\frac{1}{4}$ (d) $\frac{1}{6}$
12. Find $F(2)$.
(a) $\frac{1}{2}$ (b) $\frac{3}{4}$ (c) $\frac{5}{6}$ (d) $\frac{2}{3}$
13. What is $P(X > 1)$?
(a) $\frac{1}{2}$ (b) $\frac{5}{12}$ (c) $\frac{1}{3}$ (d) $\frac{7}{12}$
14. Given $P(A) = 0.7$, $P(A \cup B) = 0.9$, and $P(A \cap B) = 0.5$, what is $P(B)$?
(a) 0.8 (b) 0.6 (c) 0.7 (d) 0.5
15. If $E(X) = 2$ and $E(X^2) = 8$, then the value of the $V(X) =$?
(a) 0 (b) 2 (c) 4 (d) 8
16. A box contains 9 blue and 3 red balls. If two balls are randomly picked, what is the probability that at least one is red?
(a) $\frac{3}{11}$ (b) $\frac{3}{4}$ (c) $\frac{18}{33}$ (d) $\frac{5}{11}$

17. **Given** $P(A \cup B) = 0.7$, $P(A \cap B) = 0.2$, **what are** $P(A)$ **and** $P(B)$?
- (a) $P(A) = 0.5$ and $P(B) = 0.4$ (b) $P(A) = 0.4$ and $P(B) = 0.6$
(c) $P(A) = 0.4$ and $P(B) = 0.3$ (d) $P(A) = 0.7$ and $P(B) = 0.3$

18. **If** $E(X) = 6$, **what is** $E(5 - X)$?
- (a) 1 (b) 0 (c) -1 (d) 2

Answer the next three questions based on the following information

The probability function of random variable x is given below:

$$P(x) = \frac{2x+1}{k}; x = 1, 2, 3, 4$$

19. **What is the value of** k ?
- (a) 18 (b) 25 (c) 12 (d) 24
20. **What is** $E(X)$?
- (a) 1.75 (b) 2.92 (c) 3.25 (d) 2.25
21. **What is** $V(X)$?
- (a) 1.05 (b) 3.0 (c) 1.5 (d) 1.25
22. **What is the probability that at least one item in a sample space will occur?**
- (a) 0 (b) 0.5 (c) 1 (d) Undefined
23. **In a binomial distribution with** $p = 0.6$ **and** $n = 9$, **what is** $P(6)$?
- (a) 0.2007 (b) 0.2508 (c) 0.2311 (d) 0.7682
24. **Which of the following statements about a binomial distribution are true?**
- i. The probability of success remains constant for each trial.
ii. The trials are dependent on each other.
iii. The number of trials is fixed in advance.
- Which one is correct?**
- (a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii
25. **If the variance of a Poisson distribution is 3.5, what is** $P(1)$?
- (a) 0.1465 (b) 0.1358 (c) 0.1839 (d) 0.2184

“Why speculate when you can calculate?” - John C. Baez

Answer Key

1. (b) $\frac{\log_e 2}{r}$

2. (d) i, ii and iii

3. (c) CBR

4. (c) 1

5. (a) $\frac{1}{4}$

6. (c) 6^r

7. (c) 0.975

8. (b) $5\sqrt{2}$

9. (b) 9
10. (b) i and iii

11. (c) $\frac{1}{4}$

12. (c) $\frac{5}{6}$

13. (a) $\frac{1}{2}$

14. (c) 0.7

15. (c) 4

16. (d) $\frac{5}{11}$

17. (a) $P(A) = 0.5$ and $P(B) = 0.4$

18. (c) -1
19. (d) 24

20. (b) 2.92

21. (a) 1.05

22. (c) 1

23. (d) 0.7682

24. (b) i and iii

25. (b) 0.1358