SYLHET CADET COLLEGE

PRE-TEST EXAMINATION - 2023 | Set | C |
CLASS: XII
MULTIPLE CHOICE QUESTIONS **Subject Code:** | 1 | 3 | 0 |
STATISTICS SECOND PAPER
TIME – 25 minutes
FULL MARKS – 25

[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. **Three objects can be placed in 2 positions in – ways.**
   (a) 3 (b) 4 (c) 6 (d) 8

2. **A die is thrown twice. This is called –**
   (a) An experiment (b) sample space (c) A random experiment (d) A trial

3. **A coin is thrown thrice. How many outcomes are generated?**
   (a) 3 (b) 4 (c) 8 (d) 9

4. **Which is the formula of empirical/relative frequency approach of probability?**
   (a) $P = \frac{\text{No. of favorable outcomes}}{\text{Total no. of possible outcomes}}$ (b) $P = \frac{\text{No. of total outcomes}}{\text{No. of favorable outcomes}}$
   (c) $P = \lim_{n(S)\to\infty} \frac{n(A)}{n(S)}$ (d) $P = \lim_{n(A)\to\infty} \frac{n(A)}{n(S)}$

5. **What is the correct formula for conditional probability?**
   (a) $P(A|B) = \frac{P(A\cap B)}{P(B|A)}$ (b) $P(A|B) = \frac{P(A\cap B)}{P(A)}$ (c) $P(A|B) = \frac{P(A\cap B)}{P(B)}$ (d) $P(A|B) = \frac{P(B|A)}{P(B|A)}$

Answer the next THREE questions based on the following information

X	0	1	2
P(x)	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{5}{12}$

6. **What is the value of $E(X)$**
   (a) $\frac{15}{12}$ (b) $\frac{13}{12}$ (c) $\frac{1}{12}$ (d) $\frac{11}{13}$

7. **What is the value of $E(X^2)$**
   (a) $\frac{25}{12}$ (b) $\frac{13}{12}$ (c) $\frac{23}{12}$ (d) $\frac{25}{13}$

8. **What is $V(2X)$?**
   (a) 2.93 (b) 2.91 (c) 1.97 (d) 2.97

9. **10 out of each 100 people in a city walk to the office. If one is picked randomly, what is the probability s/he does not walk to the office?**
   (a) 0.95 (b) 0.10 (c) 0.90 (d) 0.01

10. **The third axiom of probability is –**
    (a) $0 \le P(A) \le 1$ (b) $P(S) = 1$
    (c) $P(A_1 U A_2 U \cdots U A_n) = \sum_{i=1}^{\infty} P(A_i)$ (d) $P(A) = 1 - P(A)$

Answer the next three questions using the following information

$P(A) = \frac{1}{3}, P(B) = \frac{1}{2} \& P(A \cup B) = \frac{7}{12}$

11. $P(A \cap B) =$?
    (a) $\frac{5}{12}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{15}{16}$

12. $P(A \cap \bar{B}) =$?
    (a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{5}{6}$ (d) $\frac{1}{12}$

13. **What is the probability that B occurs or A does not occur?**
    (a) $\frac{3}{4}$ (b) $\frac{7}{12}$ (c) $\frac{5}{12}$ (d) $\frac{11}{12}$

14. **Possible value of probability**

i. -1 ii. 0.5 iii. 0

Which one is correct?

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

15. **A set of sample points tabulated along with their respective probabilities is an example of –**

(a) Probability distribution (b) Probability function

(c) Frequency distribution (d) Marginal probability distribution

16. **Which one is a property of marginal probability density function?**

(a) $\int_x f(x^2)\,dx = 1$ (b) $\int_x f(x^2)\,dx = 0.5$ (c) $\int_x f(x)\,dx = 1$ (d) $P(x \geq 1)$

17. **Integrated value of $\frac{1}{4}x^4$ –**

(a) $\frac{1}{20}x^5$ (b) $\frac{1}{20}x^5 + c$ (c) $\frac{1}{5}x^4$ (d) $\frac{5}{4}x^5$

18. **Which one is NOT an example of a continuous random variable –**

(a) Weight (b) Height (c) Time (d) Size of television

Answer the next THREE questions using the following information

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

19. **What is the value of k?**

(a) 10 (b) 11 (c) 14 (d) 15

20. $F(2) =$ –

(a) $\frac{2}{14}$ (b) $\frac{3}{11}$ (c) $\frac{5}{14}$ (d) $\frac{5}{11}$

21. $P(x)$ **is a –**

(a) Joint probability distribution (b) Cumulative probability distribution

(c) Probability mass function (d) Probability Density function

22. **A coin is tossed twice and no. of heads appeared is denoted by X. How many possible values of X are there?**

(a) 1 (b) 2 (c) 0 (d) 3

Answer the next two questions based on the following information

X	0	1	2
P(x)	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$

23. **What is F(1)**

(a) 0.65 (b) 0.75 (c) 0.5 (d) 1

24. $P(X \leq 1 \leq 3) =$–

(a) 0.75 (b) 0.70 (c) 0.95 (d) 1

25. **If** $E(X) = -0.5$**, then** $E(1 - 2X) =$**?**

(a) 0 (b) -1 (c) 2 (d) 1

Answer Key

1. (c) 6
2. (c) A random experiment
3. (c) 8
4. (a) $P = \frac{\text{No. of favorable outcomes}}{\text{Total no. of possible outcomes}}$
5. (a) $P(A|B) = \frac{P(A \cap B)}{P(B|A)}$
6. (b) $\frac{13}{12}$
7. (c) $\frac{23}{12}$
8. (d) 2.97
9. (c) 0.90
10. (c) $P(A_1 U A_2 U \cdots U A_n) = \sum_{i=1}^{\infty} P(A_i)$
11. (c) $\frac{1}{4}$
12. (a) $\frac{1}{4}$
13. (d) $\frac{11}{12}$
14. (c) ii and iii
15. (a) Probability distribution
16. (c) $\int_x f(x)\,dx = 1$
17. (b) $\frac{1}{20}x^5 + c$
18. (d) Size of television
19. (c) 14
20. (c) $\frac{5}{14}$
21. (c) Probability mass function
22. (d) 3
23. (b) 0.75
24. (a) 0.75
25. (c) 2