

Sylhet Cadet College
Model Test Examination - 2023
Class: HSC

Subject: Statistics Second Paper (MCQ)
Subject Code: 130

Time: 25 minutes

Full Marks: 25

Answer all the questions. Each question is worth one (1) mark.

1. Tossing a coin twice generates how many outcomes?

- (a) 4 (b) 16 (c) 8 (d) 2

Answer the next three questions based on the following information.

A card is drawn from of pack of playing cards.

2. What is the probability that the card is a King?

- (a) 0.0192 (b) 0.25 (c) 0.5 (d) 0.0769

3. P(The card is not from Diamonds)–

- (a) $\frac{1}{2}$ (b) 0 (c) $\frac{3}{4}$ (d) $\frac{1}{4}$

4. P(The card is red or Clubs)

- (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{2}{3}$ (d) $\frac{3}{4}$

5. If a neutral die is thrown, the probability of having a digit greater than 6 is

- (a) $\frac{1}{6}$ (b) $\frac{0}{6}$ (c) $\frac{2}{3}$ (d) $\frac{3}{6}$

6. Tossing a coin twice generates how many outcomes?

- (a) 4 (b) 16 (c) 8 (d) 2

7. How many conditions does a probability density function have?

- (a) 2 (b) 3 (c) 4 (d) 5

8. The conditions of a probability distribution are–

i. $\sum P(X) = 1$

ii. $\sum P(X) = 0$

iii. $0 \leq P(X) \leq 1$

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

Answer the next two questions using the following information

x	1	2	3	4	5	6
P(x)	k	2k	3k	4k	5k	6k

9. What is the value of k?

- (a) $\frac{7}{21}$ (b) $\frac{5}{21}$ (c) $\frac{1}{21}$ (d) 1

10. What is the type of variable X?

- (a) Discrete (b) Discrete random (c) Continuous (d) Continuous random

11. What is $F(\infty)$ for a distribution function $F(x)$?

- (a) $-\infty$ (b) -1 (c) 0 (d) 1

12. The example of a discrete random variable is–

i. Binomial variate

ii. Poisson variate

iii. Normal variate

Which one is correct?

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

13. What is the expected value of of the squared deviation of the value of the random variable from their mean?

- (a) Arithmetic Mean (b) Expectation (c) Variance (d) Co-variance

14. Expected value of a constant a is –

- (a) 1 (b) Variance (c) a (d) a+1

15. What is the minimum value of variance a random variable?
 (a) $-\infty$ (b) 1 (c) 0 (d) -1
16. If $y = ax + b$, what is the value of $E(y)$?
 (a) $aE(X) + b$ (b) $a^2E(X)$ (c) $E(X)$ (d) b
17. What is the value of $V(5)$?
 (a) 0 (b) 25 (c) 5 (d) 1
18. If $P(x) = \frac{1}{n}; x = 1, 2, 3, \dots, n$, what is the value of $E(X)$?
 (a) $\frac{n}{2}$ (b) $\frac{n-1}{2}$ (c) $\frac{n+1}{2}$ (d) $n + 1$
19. If $P(x) = \frac{4-|5-x|}{k}; x = 2, 3, 4, \dots, 8$, what is the value of k ?
 (a) 5 (b) 8 (c) 16 (d) 24
20. How many parameters are there in a binomial distribution?
 (a) 1 (b) 2 (c) 3 (d) 4
21. In a Binomial distribution, how are mean and variance related?
 (a) $Mean > Variance$ (b) $Mean < Variance$ (c) $Mean = Variance$ (d) $Mean = 2 \times Variance$
22. When does Binomial distribution tend to Poisson distribution?
 (a) $n \rightarrow \infty$ and $p \rightarrow \infty$ (b) $n \rightarrow 0$ and $p \rightarrow 0$ (c) $n \rightarrow \infty$ and $p \rightarrow 0$ (d) $n \rightarrow 0$ and $p \rightarrow \infty$
23. What is the mean of Poisson distribution?
 (a) $\frac{1}{\sqrt{m}}$ (b) m (c) $\frac{1}{m}$ (d) $1 + \frac{1}{m}$
24. The parameter of a Poisson variate is 2. What is its variance?
 (a) 0 (b) 4 (c) $\sqrt{2}$ (d) 2
25. The number of people living per unit area is called—
 (a) Population Index (b) Population Density
 (c) Human Development Index (d) Dependency Ratio
26. Which formula of GFR is accurate?
 (a) $GFR = \frac{B}{P} \times 1000$ (b) $GFR = \frac{B}{F_{15-49}} \times 1000$ (c) $GFR = \frac{B_i}{F_i} \times 1000$ (d) $GFR = \frac{G_i}{F_{15-49}} \times 1000$

Answer Key

1. (a) 4

2. (d) 0.0769

3. (c) $\frac{3}{4}$

4. (d) $\frac{3}{4}$

5. (b) $\frac{0}{6}$

6. (a) 4

7. (b) 3

8. (b) i and iii

9. (a) $\frac{7}{21}$
10. (b) Discrete random

11. (d) 1

12. (a) i and ii

13. (c) Variance

14. (c) a

15. (c) 0

16. (a) $aE(X) + b$

17. (a) 0

18. (c) $\frac{n+1}{2}$
19. (c) 16

20. (b) 2

21. (a) $Mean > Variance$

22. (c) $n \rightarrow \infty$ and $p \rightarrow 0$

23. (b) m

24. (d) 2

25. (b) Population Density

26. (b) $GFR = \frac{B}{F_{15-49}} \times 1000$