

**Pabna Cadet College**

**Test Examination - 2021**

**Class: XII**

**Subject: Statistics 2nd Paper (MCQ)**

**Time: 25 minutes**

**Sub Code: 130**

**Full Marks: 25**

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

1. Mutually exclusive events are
  - (a) always independent
  - (b) always dependent
  - (c) the relationship cannot be determined
  - (d) dependent or independent, depending on scenario
2.  $P(A \cup B) = P(A) + P(B)$  is true for
  - (a) independent events
  - (b) dependent events
  - (c) mutually exclusive events
  - (d) complementary events
3. If a coin is tossed  $n$  times, how many outcomes are generated?
  - (a)  $n$
  - (b)  $n^2$
  - (c)  $2^n$
  - (d)  $2n$

**Answer the questions 4-5 according to the information below**

$$P(A) = \frac{1}{8}, P(A|B) = \frac{1}{4}, \text{ and } P(B|A) = \frac{1}{6}$$

4.  $P(A \cap B) = ?$ 
  - (a)  $\frac{1}{48}$
  - (b)  $\frac{1}{24}$
  - (c)  $\frac{1}{32}$
  - (d) 1
5. A card is drawn at random from a well-shuffled deck of 52 cards. What is the probability that the drawn card is not a Queen?
  - (a)  $\frac{1}{52}$
  - (b)  $\frac{4}{52}$
  - (c)  $\frac{1}{13}$
  - (d)  $\frac{12}{13}$
6. If  $X$  denotes number of successes in a coin toss, how many possible values of  $X$  are there?
  - (a) 0
  - (b) 1
  - (c) 2
  - (d) 3
7. Which one is a correct condition of a pdf?
  - (a)  $\int_0^1 f(x)dx = 1$
  - (b)  $P(X) \geq 0$
  - (c)  $\int_a^b f(x)dx = 1; a \leq x \leq b$
  - (d)  $\int_0^{\text{Median}} f(x)dx = 0.55$
8.  $P(A \cap \bar{B}) = ?$ 
  - (a)  $P(A) - P(A \cap B)$
  - (b)  $P(B) - P(A \cap B)$
  - (c)  $P(A) - P(A \cup B)$
  - (d)  $P(B) - P(A \cup B)$

**Answer the questions 9-10 according to the following information.**

$$P(x, y) = \frac{x+2y}{16}$$

9.  $P(X) = ?$ 
  - (a)  $\frac{x+2y}{3}$
  - (b)  $\frac{2x+y}{3}$
  - (c)  $\frac{2x+3y}{3}$
  - (d)  $\frac{x+3}{4}$
10.  $P(X|Y=0) = ?$ 
  - (a)  $\frac{x+2y}{4y+1}$
  - (b) 1
  - (c)  $x$
  - (d) 0

11.  $P(x) = \frac{1}{n}$  and  $x = 1, 2, 3, \dots$ ;  $E(X) = ?$   
 (a)  $\frac{n}{2}$  (b)  $\frac{n-1}{2}$  (c)  $\frac{n+1}{2}$  (d)  $n + 1$
12. If  $Y = aX + b$ ,  $E(X) = ?$   
 (a)  $aE(X) + b$  (b)  $a^2E(X)$  (c)  $E(X)$  (d)  $a + bE(X)$
13. Expectation is equal to-  
 (a) Variance (b) Square of variance (c) Arithmetic mean (d) Standard deviation
14. If  $E(X) = 2$  and  $E(X^2) = 8$ , what is the standard deviation?  
 (a) 0 (b) 2 (c) 4 (d) 8
15.  $f(x) = 5x^4$ ;  $0 \leq x \leq 1$ ,  $E(X) = ?$   
 (a) 0.0204 (b) 0.833 (c) 0.9204 (d) 1
16. The mean of the binomial distribution is  
 (a)  $np$  (b)  $nq$  (c)  $npq$  (d)  $\sqrt{npq}$
17. What is true of binomial distribution?  
 (a)  $np = 0$  (b)  $np < 0$  (c)  $np > 0$  (d)  $np \neq 0$
18. If a coin is tossed once, it is called  
 i Bernoulli trial  
 ii Uniform trial  
 iii Poisson process
- Which one is correct  
 (a) i & ii (b) i & iii (c) i (d) i, ii, & iii
19. If the mean of a Poisson distribution is 4, what is its variance?  
 (a) 2 (b) 3 (c) 4 (d) 16
20. If a Poisson distribution is defined as  $P(x) = \frac{e^{-4}4^x}{x!}$ , what is the value of  $P(X \leq 1)$   
 (a) 0.09 (b) 0.02 (c) 0.07 (d) 0.24
21. What is true of Poisson distribution?  
 (a)  $Mean > Variance$  (b)  $Mean < Variance$  (c)  $Mean = Variance^2$  (d)  $Mean = Variance$
22. The Poisson distribution -  
 i is a discrete distribution  
 ii gives a probability mass function  
 iii gives a probability density function
- Which one is true?  
 (a) i & ii (b) i & iii (c) i, ii, & iii (d) ii & iii
23. If a neutral coin is tossed 5 times, what is the probability that there would be at least 2 heads?  
 (a) 0.81 (b) 0.5 (c) 0.31 (d) 0.16
24. When is a Binomial distribution symmetric?  
 (a)  $p < q$  (b)  $p > q$  (c)  $p = q^2$  (d)  $p = q$
25. Which formula represents the exponential growth?  
 (a)  $P_n = P_o e^{rn}$  (b)  $P_n = P_o(1 + r)^n$  (c)  $P_n = P_o n e^r$  (d)  $P_o = P_n e^{rn}$