

[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. A die is rolled twice. How many possible outcomes are there?  
(a) 6 (b) 12 (c) 36 (d) 18
- Answer the next TWO questions based on the following information.  
An urn contains 5 red, 7 blue, and 8 green balls.
2. What is the probability that the ball drawn is red?  
(a) 0.26 (b) 0.25 (c) 0.2 (d) 0.4
3. P(The ball drawn is not blue)–  
(a)  $\frac{13}{20}$  (b) 0.5 (c)  $\frac{7}{20}$  (d)  $\frac{8}{20}$
4. The conditions for a cumulative distribution function (CDF) are–  
i.  $F(x)$  is non-decreasing.  
ii.  $0 \leq F(x) \leq 1$   
iii.  $\lim_{x \rightarrow \infty} F(x) = 1$   
Which one is correct?  
(a) i and ii (b) ii and iii (c) i and iii (d) i, ii, and iii
5. Which one is not a discrete random variable?  
(a) Summation two die throw outcome (b) Weight  
(c) Number of heads in five coin tosses (d) Released version number of a software
6.  $f(x) = x^2; 0 < X < 4$ ; What is  $F(4)$ ?  
(a) 16 (b) 0 (c) 4 (d) 1
- Answer the next three questions based on the following information  
The probability function of random variable  $x$  is given below:  
$$P(x) = \frac{2x+1}{k}; x = 1, 2, 3, 4$$
7. What is the value of  $k$ ?  
(a) 18 (b) 25 (c) 12 (d) 24
8. What is  $E(X)$ ?  
(a) 1.75 (b) 2.92 (c) 3.25 (d) 2.25
9. What is  $V(X)$ ?  
(a) 1.05 (b) 3.0 (c) 1.5 (d) 1.25
10. The characteristics of binomial distribution–  
i.  $E(X) > V(X)$   
ii.  $E(X) = V(X)$   
iii.  $E(X) = np$   
Which one is correct?  
(a) i and ii (b) i and iii (c) ii and iii (d) i, ii and iii
11. The parameter of a Poisson Distribution is 5. What is its mean?  
(a) 2 (b) 5 (c) 2.24 (d) 25
12. When does Binomial Distribution tend to Poisson Distribution?  
(a)  $n \rightarrow \infty, p \rightarrow 0$  &  $np$  is finite (b)  $n \rightarrow \infty, p \rightarrow 0$  &  $np$  is infinite  
(c)  $n \rightarrow \infty, p \rightarrow \infty$  &  $np$  is finite (d)  $n \rightarrow 0, p \rightarrow \infty$  &  $np$  is infinite
13. A City has a dependency ratio of 0.52. If its working-age population (15-64) is 50,000, what is the total number of dependents (0-14 and 65+)?  
(a) 15,600 (b) 20,000 (c) 26,000 (d) 30,000
- Answer the next three questions using the following information **CHECK**  $P(C) = \frac{2}{5}, P(D) = \frac{3}{4}$  &  $P(C \cup D) = \frac{9}{10}$

14.  $P(C \cap D) = ?$

(a)  $\frac{1}{10}$

(b)  $\frac{1}{4}$

(c)  $\frac{7}{20}$

(d)  $\frac{4}{5}$

15.  $P(C \cap \bar{D}) = ?$

(a)  $\frac{1}{10}$

(b)  $\frac{2}{5}$

(c)  $\frac{2}{20}$

(d)  $\frac{3}{10}$

Quote

Answer Key

1. (c) 36
2. (a) 0.26
3. (a)  $\frac{13}{20}$
4. (d) i, ii, and iii
5. (d) Released version number of a software
6. (d) 1
7. (d) 24
8. (b) 2.92
9. (a) 1.05
10. (b) i and iii
11. (b) 5
12. (a)  $n \rightarrow \infty, p \rightarrow 0$  &  $np$  is finite
13. (c) 26,000
14. (b)  $\frac{1}{4}$
15. (c)  $\frac{2}{20}$