DPP - Daily Practice Problems

Chapter-wise Sheets

MATHEMATICS (CM15)

SYLLABUS : Probability

Max. Marks : 100 **Time : 60 min.**

INSTRUCTIONS : This Daily Practice Problem Sheet contains 25 Questions divided into 2 parts.
Part-I contains 20 MCQs with only one correct option. Darken the correct circle/bubble in the Response Grid provided on each page.
Marking Scheme : (+4) for correct & (–1) for incorrect answer and zero for unattempted.
Part-II contains 5 Numeric/Integer type Questions. Mark your answer in the box provided in the Response Grid.
Marking Scheme : (+4) for correct & (0) for incorrect answer and zero for unattempted.

PART-I (Single Correct MCQs)

1. In four schools B_1, B_2, B_3, B_4 the percentage of girls students is 12, 20, 13, 17 respectively. From a school selected at random, one student is picked up at random and it is found that the student is a girl. The probability that the school selected is B_2, is

(a) $\frac{6}{31}$

(b) $\frac{10}{31}$

(c) $\frac{13}{62}$

(d) $\frac{17}{62}$

2. The chance of one event happeing is the square of the chance of a second event, but the odds against the first are the cube of the odds against the second. The chance of the first event is

(a) $\frac{1}{3}$

(b) $\frac{1}{9}$

(c) $\frac{2}{3}$

(d) $\frac{4}{9}$

3. Two numbers x and y are chosen at random (without replacement) from amongst the numbers 1, 2, 3, ...2004. The probability that $x^3 + y^3$ is divisible by 3 is

(a) $\frac{1}{3}$

(b) $\frac{2}{3}$

(c) $\frac{1}{6}$

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

4. A card is drawn from a pack of 52 cards. A gambler bets that it is a spade or an ace. What are the odds against his winning this bet?

(a) 17 : 52

(b) 52 : 17

(c) 9 : 4

(d) 4 : 9

5. If n objects are distributed at random among n persons, the probability that at least one of them will not get anything is

(a) $1-\frac{(n-1)!}{n^{n-1}}$

(b) $\frac{(n-1)!}{n^n}$

(c) $1-\frac{(n-1)!}{n^n}$

(d) None of these

6. If M and N are any two events. The probability, that exactly one of them occurs, is

(a) $P(M) + P(N) - P(M \cap N)$

(b) $P(M) + P(N) + P(M \cap N)$

(c) $P(M) + P(N)$

(d) $P(M) + P(N) - 2P(M \cap N)$

7. A four digit number is formed by the digits 1, 2, 3, 4 with no repetition. The probability that the number is odd is :

(a) zero

(b) $\frac{1}{3}$

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

(d) None of these

8. The probability that a leap year will have 53 Friday or53 Saturday, is

(a) $\frac{2}{7}$

(b) $\frac{3}{7}$

(c) $\frac{4}{7}$

(d) $\frac{1}{7}$

9. If 12 identical balls are to be placed in 3 identical boxes, then the probability that one of the boxes contains exactly 3 balls is :

(a) $220\left(\frac{1}{3}\right)^{12}$

(b) $22\left(\frac{1}{3}\right)^{11}$

(c) $\frac{55}{3}\left(\frac{2}{3}\right)^{11}$

(d) $55\left(\frac{2}{3}\right)^{10}$

10. If the integers m and n are chosen at random between 1 and 100, then the probability that a number of the form $7^m + 7^n$ is divisible by 5 equals

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

(b) $\frac{1}{7}$

(c) $\frac{1}{8}$

(d) $\frac{1}{49}$

11. If A and B are two events such that P (A) = $\frac{1}{2}$ and $P(B)=\frac{2}{3}$, then which of the following is not correct?

(a) $P(A \cup B) \geq \frac{2}{3}$

(b) $P(A \cap B') \geq \frac{1}{3}$

(c) $\frac{1}{6} \leq P(A \cap B) \leq \frac{1}{2}$

(d) $\frac{1}{6} \leq P(A' \cap B) \leq \frac{1}{2}$

12. Let A, B, C be three events. If the probability of occurring exactly one event out of A and B is 1– a, out of B and C is 1– 2a and out of C and A is 1 – a, and that of occurring three events simultaneously is a^2, then the

probability that at least one out of A, B, C will occur is

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

(b) $< \frac{1}{2}$

(c) $> \frac{1}{2}$

(d) None of these

13. If P (A) = P (B) = *x* and $P(A \cap B) = P(A' \cap B') = 1/3$, then *x* = ?

(a) 1/2

(b) 1/3

(c) 1/4

(d) 1/6

14. A bag has 13 red, 14 green and 15 white balls, p_1 is the probability of drawing exactly 2 white balls when four balls are drawn. Then the number of balls of each colour are doubled. Let p_2 be the probability of drawing 4 white balls when 8 ball are drawn, then

(a) $p_1 = p_2$

(b) $p_1 > p_2$

(c) $p_1 < p_2$

(d) None of these

15. If, $P(B) = \frac{3}{4}, P(A \cap B \cap \overline{C}) = \frac{1}{3}$ and $P(\overline{A} \cap B \cap \overline{C}) = \frac{1}{3}$, then $P(B \cap C)$ is

(a) $\frac{1}{12}$

(b) $\frac{1}{6}$

(c) $\frac{1}{15}$

(d) $\frac{1}{9}$

16. If $\frac{1+4p}{4}$, $\frac{1-p}{2}$ and $\frac{1-2p}{2}$ are the probabilities of three mutually exclusive events, then value of p is

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

(b) $\frac{1}{3}$

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

(d) $\frac{2}{3}$

17. Two numbers x and y are chosen at random (without replacement) from amongst the numbers 1, 2, 3, ...2004. The probability that $x^3 + y^3$ is divisible by 3 is

(a) $\frac{1}{3}$

(b) $\frac{2}{3}$

(c) $\frac{1}{6}$

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

18. Let A, B, C be three events such that P (A) = 0.3, P(B) = 0.4, P(C) = 0.8, $P(A \cap B) = 0.08$, $P(A \cap C) = 0.28$, $P(A \cap B \cap C) = 0.09$. If $P(A \cup B \cup C) \geq 0.75$, then

(a) $0.23 \leq P(B \cap C) \leq 0.48$

(b) $0.45 \leq P(B \cap C) \leq 0.75$

(c) $0.48 \leq P(B \cap C) \leq 0.75$

(d) None of these

19. A natural number x is chosen at random from the first 100 natural numbers. Then the probability, for the equation $x + \frac{100}{x} > 50$

to be true is

(a) $\frac{1}{20}$

(b) $\frac{11}{20}$

(c) $\frac{1}{3}$

(d) $\frac{3}{20}$

20. Given that n is odd, the number of ways in which three numbers in A.P. can be selected from 1, 2, 3, ..., n is

(a) $\frac{3(n-1)}{n(n-2)}$

(b) $\frac{3(n+1)^2}{2n(n-1)(n-2)}$

(c) $\frac{n-2}{n(n-1)}$

(d) $\frac{3(n-1)}{2n(n-2)}$

PART-II (Numeric/Integer Type Questions)

21. The probability that in the random arrangement of the letters of the word 'UNIVERSITY', the two I's does not come together is

22. Of a total of 600 bolts, 20% are too large and 10% are too small. The remainder are considered to be suitable. If a bolt is selected at random, the probability that it will be suitable is:

23. If two numbers *p* and *q* are choosen randomly from the set {1, 2, 3, 4} with replacement, then the probability that $p^2 \geq 4q$ is equal to

24. In a class of 125 students 70 passed in Mathematics, 55 in Statistics and 30 in both. If the probability that a student selected at random from the

class has passed in only one subject is a, then 100a =

25. Two integers x and y are chosen with replacement out of the set {0, 1, 2, 3, ...10}. If the probability that $|x - y| > 5$ is R, then 11k =

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 15 - MATHEMATICS			
Total Questions	25	Total Marks	100
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	28	Qualifying Score	42
Success Gap = Net Score – Qualifying Score			
Net Score = [(Correct × 4) – (Incorrect × 1)] *for part-I* + [(correct × 4)] *for part-II*			