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UNIT TEST- X|**

**UNIT TEST – 10**

**STD : X**  
**SUBJECT : MATHS**

**TIME : 1 ½ Hrs**  
**MARKS : 50**

**PROBABILITY**  
**SECTION – I**

**10 x 1 =10**

**NOTE:** (i) Answer all the 10 questions

(ii) Choose the correct answer from the given four alternatives and write the option code and the corresponding answer

1. If P is the probability of an event A, then P satisfies  
a)  $0 < p < 1$       b)  $0 \leq P \leq 1$       c)  $0 \leq P < 1$       d)  $0 < P \leq 1$
2. Let A and B be any two events and s be the corresponding sample space, then  $P(A \cap B) =$   
a)  $P(B) - P(A \cap B)$       b)  $P(A \cap B) - P(B)$       c)  $P(A)$       d)  $P[(A \cap B)']$
3. The probability that a student will score centum in mathematics is  $\frac{4}{5}$ . The probability that he will not score centum is  
a)  $\frac{1}{5}$       b)  $\frac{2}{5}$       c)  $\frac{3}{5}$       d)  $\frac{4}{5}$
4. If A and B are two events such that  $P(A) = 0.25$ ,  $P(B) = 0.05$  and  $P(A \cap B) = 0.14$ , then  $P(A \cup B) =$   
a) 0.61      b) 0.16      c) 0.14      d) 0.6
5. If A and B are mutually exclusive events and s is the sample space such that  $P(A) = \frac{1}{3} P(B)$  and  $S = A \cup B$ , then  $P(A) =$   
a)  $\frac{1}{4}$       b)  $\frac{1}{2}$       c)  $\frac{3}{4}$       d)  $\frac{3}{8}$
6. If  $P(A) = 0.25$ ,  $P(B) = 0.50$ ,  $P(A \cap B) = 0.14$  then  $P(\text{neither A nor B}) =$   
a) 0.39      b) 0.25      c) 0.11      d) 0.24
7. A bag contains 5 black balls, 4 white balls, 3 red balls. If a ball selected at random, the probability that it is not a red ball is  
a)  $\frac{5}{12}$       b)  $\frac{4}{12}$       c)  $\frac{3}{12}$       d)  $\frac{3}{4}$
8. The probability that a non-leap year will have 53 Sundays and 53 Mondays is  
a)  $\frac{1}{7}$       b)  $\frac{2}{7}$       c)  $\frac{3}{7}$       d) 0
9. Probability of sure event is  
a) 1      b) 0      c) 100      d) 0.1

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10. The outcome of random experiment results in either success or failure. If the probability of success is twice the probability of failure, then the probability of success is

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

**SECTION – II**

**5 x 2 =10**

**NOTE:** (i) Answer 5 questions

(ii) Question number 17 is compulsory. Select any 4 questions from the first 6 questions

11. A die is thrown twice. Find the probability of getting a total of 9

12. Two coins are tossed together. What is the probability of getting at most one head.

13. 20 cards are numbered from 1 to 20. One card is drawn at random. What is the probability that the number on the card is (i) a multiple of 4 (ii) not a multiple of 6.

14. A box contains 10 white, 6 red and 10 black balls. A ball is drawn at random. Find the probability that the ball drawn is white or red.

15. Three rotten eggs are mixed with 12 good ones. One egg is chosen at random. What is the probability of choosing a rotten egg?

16. If A and B are two events such that  $P(A) = \frac{1}{4}$ ,  $P(B) = \frac{2}{5}$ ,  $P(A \cup B) = \frac{1}{2}$  then find  $P(A \cap B)$ .

17. A box contains 4 green, 5 blue and 3 red balls. A ball is drawn at random. Find the probability that the selected ball is (i) Red in colour (ii) not green in colour

**(OR)**

If A is an event of a random experiment such that  $P(A) : P(\bar{A}) = 7 : 12$ , then find  $P(A)$ .

**SECTION – III**

**6 x 5 =30**

**NOTE:** (i) Answer 6 questions

(ii) Question number 25 is compulsory. Select any 5 questions from the first 7 questions

18. Two dice are rolled simultaneously. Find the probability that the sum of the numbers on the faces is neither divisible by 3 nor by 4.

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19. Let A, B, C be any three mutually exclusive and exhaustive events such that  $P(B) = \frac{3}{2} P(A)$  and  $P(C) = \frac{1}{2} P(B)$ . Find  $P(A)$ .
20. Three coins are tossed simultaneously. Using addition theorem on probability, find the probability that either exactly two tails or at least one head turn up.
21. Two dice are rolled and the product of the outcomes (numbers) are found. What is the probability that the product so found is a prime number?
22. A bag contains 10 white, 5 black, 3 green and 2 red balls. One ball is drawn at random. Find the probability that the ball drawn is white or black or green.
23. A basket ball contains 20 apples and 10 oranges out of which 5 apples and 3 oranges are rotten. If a person takes out one fruit at random, find the probability that the fruit is either an apple or a good fruit.
24. The probability that a new car will get an award for its design is 0.25, the probability that it will get an award for efficient use of fuel is 0.35 and the probability that it will get both the awards is 0.15. Find the probability that  
i) It will get at least one of the two awards ii) It will get only one of the awards.
25. The probability that A, B and C can solve a problem are  $\frac{4}{5}$ ,  $\frac{2}{3}$  and  $\frac{3}{7}$  respectively. The probability of the problem being solved by A and B is  $\frac{8}{15}$ , B and C is  $\frac{2}{7}$ , A and C is  $\frac{12}{35}$ . The probability of the problem being solved by all the three is  $\frac{8}{35}$ . Find the probability that the problem can be solved by at least one of them.

**(OR)**

The probability that a girl will be selected for admission in a medical college is 0.16. The probability that she will be selected for admission in an engineering college is 0.24 and the probability that she will be selected in both, is 0.11.

- (i) Find the probability that she will be selected in at least one of the two colleges.
- (ii) Find the probability that she will be selected either in a medical college only or in an engineering college only.