DPP
DAILY PRACTICE PROBLEMS

CLASS : XIIth **SUBJECT : MATHS**
DATE : **DPP NO. : 3**

Topic :- PROBABILITY

1. Three integers are chosen at random from the set of first 20 natural numbers. The chance that their product is a multiple of 3 is
   a) $194/285$ b) $1/57$ c) $13/19$ d) $3/4$

2. A purse contains 2 six-sided dice. One is a normal fair die, while the other has two 1's , and two 5's. A die is picked up and rolled. Because of some secret magnetic attraction of the unfair die, there is 75% chance of picking the unfair die and a 25% chance of picking a fair die. The die is rolled and shows up the face 3.The probability that a fair die was picked up is
   a) $1/7$ b) $1/4$ c) $1/6$ d) $1/24$

3. A problem in mathematics is given to three students A, B,C and their respective probability of solving the problem is $1/2$, $1/3$ and $1/4$. Probability that the problem is solved is
   a) $3/4$ b) $1/2$ c) $2/3$ d) $1/3$

4. A fair die is thrown 20 times. The probability that on the 10^{th} throw, the fourth six appears is
   a) ${}^{20}C_{10} \times 5^6/6^{20}$ b) $120 \times 5^7/6^{10}$ c) $84 \times 5^6/6^{10}$ d) None of these

5. Mr. A lives at origin on the Cartesian plane and has his office at (4, 5). His friend lives at (2,3) on the same plane. Mr. A can go to his office travelling one black at a time either in the $+y$ or $+x$ direction. If all possible paths are equally likely then the probability that Mr. A passed his friends house is (shortest path for any event must be considered)
   a) $1/2$ b) $10/21$ c) $1/4$ d) $11/21$

6. There are two urns A and B. Urn A contains 5 red, 3 blue and 2 white balls, urn B contains 4 red, 3 blue and 3 white balls. An urn is choosen at random and a ball is drawn. Probability that the ball drawn is red is
   a) $9/10$ b) $1/2$ c) $11/20$ d) $9/20$

7. In a game a coin is tossed $2n + m$ times and a player wins if he does not get any two consecutive outcomes same for atleast $2n$ times in a row. The probability that player wins the game is
   a) $\frac{m+2}{2^{2n}+1}$ b) $\frac{2n+2}{2^{2n}}$ c) $\frac{2n+2}{2^{2n+1}}$ d) $\frac{m+2}{2^{2n}}$

8. Let A and B be events. Suppose $P(A) = 0.4$, $P(B) = p$ and $P(P \cup B) = 0.7$. The value of p for which A and B are independent is

a) $1/3$ b) $1/4$ c) $1/2$ d) $1/5$

9. If a and b are chosen randomly from the set consisting of numbers 1, 2, 3, 4, 5, 6 with replacement. Then the probability that $\lim_{x\to 0}\left[(a^x + b^x)/2\right]^{2/x} = 6$ is

a) $1/3$ b) $1/4$ c) $1/9$ d) $2/9$

10. Four die are thrown simultaneously. The probability that 4 and 3 appear on two of the die given that 5 and 6 have appeared on other two die is

a) $1/6$ b) $1/36$ c) $12/151$ d) None of these

11. Cards are drawn one by one without replacement from a pack of 52 cards. The probability that 10 cards will precede the first ace is

a) $241/1456$ b) $164/4165$ c) $451/884$ d) None of these

12. Forty teams play a tournament. Each team plays every other team just once. Each game result in a win for one team. If each team has a 50% chance of winning each game, the probability that at the end of the tournament, every team has won a different number of games is

a) $1/780$ b) $40!/2^{780}$ c) $40!/3^{780}$ d) None of these

13. $2n$ boys are randomally divided into two subgroups containing n boys each. The probability that the two tallest boys are in different groups is

a) $n/(2n-1)$ b) $(n-1)/(2n-1)$ c) $(n-1)/4n^2$ d) None of these

14. The probability of solving a question by three students are $1/2$, $1/4$, $1/6$ respectively. Probability of question being solved will be

a) $33/48$ b) $35/48$ c) $31/48$ d) $37/48$

15. A fair coin is tossed 10 times. Then the probability that two heads do not occurs consecutively is

a) $7/64$ b) $1/8$ c) $9/16$ d) $9/64$

16. If A and B each toss three coins. The probability that both get the same number of heads is

a) $1/9$ b) $3/16$ c) $5/16$ d) $3/8$

17. A draws a card from a pack of n cards marked 1, 2, ...n. The card is replaced in the pack and B draws a card. Then the probability that A draws a higher card than B is

a) $(n+1)2n$ b) $1/2$ c) $(n-1)/2n$ d) None of these

18. All the jacks, queens, kings and aces of a regular 52 cards deck are taken out. The 16 cards are thoroughly shuffled and my opponent, a person who always tells the truth, simultaneously draws two cards at random and says, 'I hold at least one ace'. The probability that he holds two aces is

a) $2/8$ b) $4/9$ c) $2/3$ d) $1/9$

19. The probability of winning a race by three persons A, B and C are $1/2$, $1/4$, and $1/4$, respectively. They run two races. The probability of A winning the second race when B wins the first race is

a) $1/3$ b) $1/2$ c) $1/4$ d) $2/3$

20. A composite number is selected at random from the first 30 natural numbers and it is divided by 5. The probability that there will be a remainder is

a) $14/19$ b) $5/19$ c) $5/6$ d) $7/15$