1. The probability of a leap year selected at random contain 53 Sunday is:

Leap year=366 the year contain 52 week and 2days

Probably two days**{**sat,sun & sun,man & man,thu & thu,wed & wed,tha & tha,fri & fri,sat**}**

The probably 2 days become Sunday is : 2/7

(a) 53/ 366 (b) 1/7 (c) 2/7 (d) 53/365

2. A bag contains 3 red and 2 blue marbles. A marble is drawn at random. The probability of drawing a black ball is :

The bag does not contain a black ball then the probability black ball is **zero/5**

(a) 3/5 (b) 2/5 (c) 0/5 (d) 1/5

3. The probability that it will rain tomorrow is 0.85. What is the probability that it will not rain tomorrow.

Not rain = 1 – rain & 1 - .85 = .15 then the probability not rain = .15 / 1 =**3/20**

(a) 0.25 (b) 0.145 (c) 3/20 (d) none of these

4. What is the probability that a number selected from the numbers (1, 2, 3,.....,15) is a multiple of 4?

Count of number =15 & multiple of 4 = { 4 , 8 , 12 }

Then the probability **= 3 / 15**

(a) 1/5 (b) 4/5 (c) 2/15 (d) 1/3

5. What are the total outcomes when we throw three coins?

{(H,H,T**),(**H,H,H**),(**H,T,H**),(**H,T,T**),(**T,H,H**),(**T,H,T**),(**T,T,H**),(**T,T,T**)}**

(a) 4 (b) 5 (c) 8 (d) 7

6. The probability that a prime number selected at random from the numbers (1,2,3, ...35) is :

Prime number ={2,3,5,7,11,13,17,19,23,29,31}

(a) 12/35 (b) 11/35 (c) 13/35 (d) none of these

7. The sum of the probability of an event and non event is :

(a) 2 (b) 1 (c) 0 (d) none of these.

8. The following probabilities are given; choose the correct answer for that which is not possible.

(a) 0.15 (b) 2/7 (c) 7/5 (d) none of these.

9. If three coins are tossed simultaneously, than the probability of getting at least two heads, is:

{ (H,H,T**),(**H,H,H**),(**H,T,H**),(**H,T,T**),(**T,H,H**),(**T,H,T**),(**T,T,H**),(**T,T,T**) }**

(a) 1/4 (b) 3/8 (c) ½ (d) 1/8

10. A letter is chosen at random from the letters of the word ﷺASSASSINATIONﷺ. The probability that the letter chosen has:

(a) 6/13 (b) 7/13 (c) 1 (d) none of these.

11. A dice is thrown. Find the probability of getting an even number.

{1,2,3,4,5,6} & even number={2,4,6} then the probability = 3/6 = 1/2

(A) 2/3 (B) 1 (C) 5/6 (D) 1/2

12. Two coins are thrown at the same time. Find the probability of getting both heads.

{{H,T**},(**H,H**),(**T,H**),(**T,T**)}** **&** Both heads**={(H,H)}** then the probability =1/4

(A) 3/4 (B) 1/4 (C) 1/2 (D) 0

13. Two dice are thrown simultaneously. The probability of getting a sum of 9 is:

{(1,1),(1,2),(1,3),(1,4),(1,5),(1,6),(2,1),(2,2),(2,3),(2,4),(2,5),(2,6),(3,1),(3,2),(3,3),(3,4),(3,5),**(3,6)**,(4,1),(4,2),(4,3),

(4,4),(**4,5**),(4,6),(5,1),(5,2),(5,3)**,(5,4)**,(5,5),(5,6),(6,1),(6,2)**,(6,3),**(6,4),(6,5),(6,6)**}**

(A) 1/10 (B) 3/10 (C) 1/9 (D) 4/9

14. 100 cards are numbered from 1 to 100. Find the probability of getting a prime number.

Prime number = {2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97}

Then probability =25/100

(A) 3/4 (B) 27/50 (C) 1/4 (D) 29/100

15. A bag contains 5 red balls and some blue balls .If the probability of drawing a blue ball is double that of a red ball, then the number of blue balls in a bag is:

(A) 5 (B) 10 (C) 15 (D) 20

16. A box of 600 bulbs contains 12 defective bulbs. One bulb is taken out at random from this box. Then the probability that it is non-defective bulb is:

Non-defective = 600 – 12 = 588 Then the probability =588/600

(A) 143/150 (B) 147/150 (C) 1/25 (D) 1/50

17. Cards marked with numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box randomly, then the probability that the number on card is a perfect square.

Perfect square={4,9,16,25,36,49,64,81,100}

(A) 9/100 (B) 1/10 (C) 3/10 (D) 19/100

18. What is the probability of getting 53 Mondays in a leap year?

Leap year=366 the year contain 52 week and 2days

Probably two days**{**sat,sun & sun,man & man,thu & thu,wed & wed,tha & tha,fri & fri,sat**}**

The probably 2 days become monday is : 2/7

(A) 1/7 (B) 53/366 (C) 2/7 (D) 7/366

19. A card is drawn from a well shuffled deck of 52 cards. Find the probability of getting a king of red suit.

shuffled deck of 52 cards have **4** king and **2** of them his color is **red** then probability of this =2/52

(A) 1/26 **(B) 3/26** **(C) 7/52** **(D) 1/13**

20. A game of chance consists of spinning an arrow which is equally likely to come to rest pointing to one of the number 1,2,3……12 ,then the probability that it will point to an odd number is:

Odd numbers are {1,3,5,7,9,11} then p(odd)= 6/12 **= 1/2**

(A) 1/6 **(B) 1/12** **(C) 7/12** **(D) 5/12**

21. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Aryan wins if all the tosses give the same result i.e. three heads or three tails and loses otherwise. Then the probability that Aryan will lose the game.

These outcomes can be listed as follows: {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT}

Out of these 8 outcomes, only 2 outcomes correspond to Aryan winning the game (HHH and TTT). Therefore, the probability of Aryan winning the game is 2/8 = 1/4. Then the probability of losing the game is 1 - 1/4 = 3/4

(A) 3/4 **(B) 1/2** **(C) 1** **(D) 1/4**

22. Riya and Kajal are friends. Probability that both will have the same birthday is the same birthday is:

The probability that two specific people have the same birthday is 1/365.

(A) 364/365 **(B) 31/365** **(C) 1/365** **(D) 1/133225**

23. A number x is chosen at random from the numbers -2, -1, 0 , 1, 2. Then the probability that $x^2 < 2$ is?

$-1^2<2$ **&** $0^2<2$ **&** $1^2<2$ then probability = 3/5

(A) 1/5 **(B) 2/5** **(C) 3/5** **(D) 4/5**

24. A jar contains 24 marbles. Some are red and others are white. If a marble is drawn at random from the jar, the probability that it is red is 2/3, then the number of white marbles in the jar is:

Marbles red= 24*2/3=16 **&** the white marbles=24-16=8

(A) 10 **(B) 6** **(C) 8** **(D) 7**

25. A number is selected at random from first 50 natural numbers. Then the probability that it is a multiple of 3 and 4 is:

There are 4 multiples of 3 and 4 between 1 and 50: 12, 24, 36, and 48 **&** the probablity= 4/50 = 2/25

(A) 7/50 **(B) 4/25** **(C) 1/25** **(D) 2/25**

26. Consider a dice with the property that that probability of a face with n dots showing up is proportional to n. The probability of face showing 4 dots is

P(n) = k * n **&** k * (1 + 2 + 3 + 4 + 5 + 6) = 1 & k * 21 = 1 & k = 1/21

The probability of getting a face with 4 dots is: P(4) = (1/21) * 4 = 4/21

a) 1 /7 **b) 5 /42** **c) 1/ 21** **d) 4/ 21**

27. Runs scored by batsman in 5 one day matches are 50, 70, 82, 93, and 20. The standard deviation is _____ .

Mean = (50 + 70 + 82 + 93 + 20) / 5 = 63 &Variance = [(50 - 63)^2 + (70 - 63)^2 + (82 - 63)^2 + (93 - 63)^2 + (20 - 63)^2] / 5 = (169 + 49 + 361 + 900 + 1849) / 5 = 4656 / 5 = 931.2 & Standard deviation = sqrt(931.2) ≈ 30.51

a) 25.79 **b) 25.49** **c) 25.29** **d) 25.69**

28. Find median and mode of the messages received on 9 consecutive days 15, 11, 9, 5, 18, 4, 18, 13, 17.

a) 13, 15 **b) 13, 18** **c) 18, 15** **d) 13, 16**

29. A coin is tossed up 4 times. The probability that tails turn up in 3 cases is _____ .

P(X = k) = (n c k) * p^k * (1-p)^(n-k) **&** P(X = 3) = (4 choose 3) * (1/2)^3 * (1/2)^(4-3) = 4 * (1/2)^4 = 1/4

a) 1/ 2 **b) 1/ 3** **c) 1 /4** **d) 1 /6**

30. X is a variate between 0 and 3. The value of E(X^2) is _____ .

a) 8 **b) 7** **c) 27** **d) 9**

31.The random variables X and Y have variances 0.2 and 0.5 respectively. Let Z= 5X-2Y. The variance of Z is?

$Var(aX + bY) = a^2 Var(X) + b^2 Var(Y)$

$Var(Z) = Var(5X) + Var(-2Y)$

$Var(Z) = 5^2 Var(X) + (-2)^2 Var(Y)$

$Var(Z) = 25(0.2) + 4(0.5)$

$Var(Z) = 5 + 2$

$Var(Z) = 7$

a) 3 **b) 4** **c) 5** **d) 7**

32.Out of the following values, which one is not possible in probability?

a) P(x) = 1 **b) ∑ x P(x) = 3** **c) P(x) = 0.5** **d) P(x) = – 0.5**

33.If E(x) = 2 and E(z) = 4, then E(z – x) =?

a) 2 **b) 6** **c) 0** **d) Insufficient data**

34.The covariance of two independent random variable is _____ .

a) 1 **b) 0** **c) – 1** **d) Undefined**

35.If Σ P(x) = k^2 – 8 then, the value of k is?

Σ P(x) = 1

$k^2 - 8 = 1$ **&** $k^2 = 9$

a) 0 **b) 1** **c) 3** **d) Insufficient data**

36.If P(x) = 0.5 and x = 4, then E(x) = ?

a) 1 **b) 0.5** **c) 4** **d) 2**

37.In a discrete probability distribution, the sum of all probabilities is always?

a) 0 **b) Infinite** **c) 1** **d) Undefined**

38.If the probability of hitting the target is 0.4, find mean and variance.

Mean = E(X) = p = 0.4

Variance = Var(X) = p(1-p) = 0.4(0.6) = 0.24

a) 0.4, 0.24 **b) 0.6, 0.24** **c) 0.4, 0.16** **d) 0.6, 0.16**

39.If the probability that a bomb dropped from a place will strike the target is 60% and if 10 bombs are dropped, find mean and variance? Mean = E(X) =**np**= 10 x 0.6 = 6 **&** Variance=**npq**= 10x.6x.4=2.4

a) 0.6, 0.24 **b) 6, 2.4** **c) 0.4, 0.16** **d) 4, 1.6**

40. Find the mean of tossing 8 coins.

probability of success equal to 0.5 then **mean** =np =8*.5=4

a) 2 **b) 4** **c) 8** **d) 1**

41. What is the mean and variance for standard normal distribution?

a) Mean is 0 and variance is 1 **b) Mean is 1 and variance is 0**

c) Mean is 0 and variance is ∞ **d) Mean is ∞ and variance is 0**

42.Variance of a random variable X is given by _____ .

a) E(X) **b) E(X2)** **c) E(X2) – (E(X))2** **d) (E(X))2**

43.Mean of a random variable X is given by _____

a) E(X) **b) E(X2)** **c) E(X2) – (E(X))2** **d) (E(X))2**

44.Mean of a constant 'a' is _____ .

a) 0 **b) a** **c) a/2** **d) 1**

45.Variance of a constant 'a' is _____ .

a) 0 **b) a** **c) a/2** **d) 1**

46.Find the mean and variance of X?

E(X) = Σ[x * P(X = x)]

E(X) = 0 * 1/9 + 1 * 2/9 + 2 * 3/9 + 3 * 2/9 + 4 * 1/9 E(X) = 2

E(X^2) = 0^2 * 1/9 + 1^2 * 2/9 + 2^2 * 3/9 + 3^2 * 2/9 + 4^2 * 1/9 then E(X^2) = 10/3

Var(X) = E(X^2) - [E(X)]^2 Var(X) = 10/3 - 2^2 Var(X) = 2/3

x	0	1	2	3	4
f(x)	1/9	2/9	3/9	2/9	1/9

a) 2, 4/3 **b) 3, 4/3** **c) 2, 2/3** **d) 3, 2/3**

47.Find the expectation of a random variable X?

E(X) = Σ[x * P(X = x)]

E(X) = (0 * 1/6) + (1 * 2/6) + (2 * 2/6) + (3 * 1/6)

E(X) = 0 + 2/6 + 4/6 + 3/6

E(X) = 9/6= 1.5

x	0	1	2	3
f(x)	1/6	2/6	2/6	1/6

a) 0.5 **b) 1.5** **c) 2.5** **d) 3.5**

48. In a Binomial Distribution, if p, q and n are probability of success, failure and number of trials respectively then variance is given by _____ .

a) np **b) npq** **c) np2q** **d) npq2**

49. If 'X' is a random variable, taking values 'x', probability of success and failure being 'p' and 'q' respectively and 'n' trials being conducted, then what is the probability that 'X' takes values 'x'? Use Binomial Distribution .

a) P(X = x) = nCx px qx **b) P(X = x) = nCx px q(n-x)**

c) P(X = x) = xCn qx p(n-x) **d) P(x = x) = xCn pn qx**

50. If 'p', 'q' and 'n' are probability pf success, failure and number of trials respectively in a Binomial Distribution, what is its Standard Deviation?

a) $\sqrt{np}$ **b)** $\sqrt{pq}$ **c) (np)2** **d) √npq**