



## MATHS

### BOOKS - SAI MATHS (TELUGU ENGLISH)

#### MEASURES OF DISPERSION AND PROBABILITY

##### Problems

1. The probability of a coin showing head is  $p$  and then 100 such coins are tossed. If the probability of 50 coins showing head is same as the probability of 51 coins showing head then  $p$  equals

A.  $\frac{1}{2}$

B.  $\frac{49}{100}$

C.  $\frac{51}{101}$

D.  $\frac{50}{101}$

**Answer: C**



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2.  $X$  is a binomial variate with parameters  $n = 6$  and  $p$ . If

$4P(X = 4) = P(X = 2)$ , then  $p$  is

A.  $\frac{1}{2}$

B.  $\frac{1}{3}$

C.  $\frac{1}{4}$

D.  $\frac{1}{6}$

**Answer: B**



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3. In a certain college, 4% of men and 1% of women are taller than 1.8m. Also, 60% of students are women. If a student selected at random is found to be taller than 1.8 m, then the probability that the student being a woman is

A.  $\frac{3}{11}$

B.  $\frac{5}{11}$

C.  $\frac{6}{11}$

D.  $\frac{8}{11}$

**Answer: A**



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4. If A and B are two events such that  $P(A/B) = 0.6$ ,  $P(B/A) = 0.3$ ,  $P(A) = 0.1$  then,  $P(\bar{A} \cap \bar{B}) =$

A. 0.88

B. 0.12

C. 0.6

D. 0.4

**Answer: A**



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5. If A and B are events such that  $P(A \cup B) = \frac{5}{6}$ ,  $P(\bar{A}) = \frac{1}{4}$  and  $P(B) = \frac{1}{3}$ , then A and B

are

- A. Mutually exclusive
- B. independent
- C. Exhaustive events
- D. Exhaustive and independent

**Answer: B**



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6. Two teams A and B have the same mean and their coefficients of variance are 4, 2 respectively. If  $\sigma_A, \sigma_B$  are the standard deviations of teams A, B respectively then the relation between them is

A.  $\sigma_A = \sigma_B$

B.  $\sigma_B = 2\sigma_A$

C.  $\sigma_A = 2\sigma_B$

D.  $\sigma_B = 4\sigma_A$

**Answer: C**



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7. In a data the number  $i$  is repeated  $i$  times for  $i = 1, 2, \dots, n$ .

Then the mean of the data is

A.  $\frac{2n + 1}{6}$

B.  $\frac{2n + 1}{4}$

C.  $\frac{2n + 1}{3}$

D.  $\frac{2n + 1}{2}$

**Answer: C**



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8. The arithmetic mean of the observations 10, 8, 5, a, b is 6 and their variance is 6.8. Then  $ab =$

A. 6

B. 4

C. 3

D. 12

**Answer: D**



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9. If the median of the data 6, 7,  $x-2$ ,  $x$ , 18, 21 written in ascending order is 16, then the variance of that data is

A.  $30\frac{1}{5}$

B.  $31\frac{1}{3}$

C.  $32\frac{1}{2}$

D.  $33\frac{1}{3}$

**Answer: B**



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10. Two persons A and B are rolling die on the condition that the person who gets 3 will win the game. If A starts the game,



then find the probabilities of A and B respectively to win the game.

A.  $\frac{6}{11}, \frac{5}{11}$

B.  $\frac{5}{11}, \frac{6}{11}$

C.  $\frac{8}{11}, \frac{3}{11}$

D.  $\frac{3}{11}, \frac{8}{11}$

**Answer: A**



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**11.** The letters of the word 'QUESTION' are arranged in a row at random. The probability that there are exactly two letters between Q and S is

A.  $\frac{1}{14}$

B.  $\frac{5}{7}$

C.  $\frac{1}{7}$

D.  $\frac{5}{28}$

**Answer: D**



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12. If  $\frac{1 + 3P}{3}$ ,  $\frac{1 - 2P}{2}$  are probabilities of two mutually exclusive events, then P lies in the interval.

A.  $\left[ -\frac{1}{3}, \frac{1}{2} \right]$

B.  $\left[ -\frac{1}{2}, \frac{1}{2} \right]$

C.  $\left[ -\frac{1}{3}, \frac{2}{3} \right]$

D.  $\left[-\frac{1}{3}, \frac{2}{3}\right]$

**Answer: A**



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**13.** The probability that an event does not happen in one trial is 0.8 The probability that the event happens atmost once in three trials is

A. 0.896

B. 0.791

C. 0.642

D. 0.592

**Answer: A**



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14. If the mean and variance of a binomial variate  $X$  are 8 and 4 respectively, then  $P(X < 3)$  equals to

A.  $\frac{265}{2^{15}}$

B.  $\frac{137}{2^{14}}$

C.  $\frac{137}{2^{16}}$

D.  $\frac{265}{2^{16}}$

**Answer: C**



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15. A candidate take three tests in succession and the probability of passing the first test is  $p$ . The probability of passing each succeeding test  $p$  or  $\frac{p}{2}$  according as he passes or fails in the preceding one. The candidate is selected if he passes at least two tests. The probability that the candidate is selected is

A.  $p^2(2 - p)$

B.  $p(2-p)$

C.  $p + p^2 + p^3$

D.  $p^2(1 - p)$

**Answer: C**



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16. A six-faced unbiased die is thrown twice and the sum of the numbers appearing on the upper face is observed to be 7 . The probability that the number 3 has appeared at least once , is

A.  $\frac{43835}{100000}$

B.  $\frac{1}{2}$

C.  $\frac{1}{3}$

D.  $\frac{1}{4}$

**Answer: C**



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17. If A,B,C are mutually exclusive and exhaustive events of a random experiment such that  $P(B) =$

$\frac{3}{2}P(A)$  and  $P(C) = \frac{1}{2}P(B)$  then  $P(A \cup C) =$

A.  $\frac{10}{13}$

B.  $\frac{3}{13}$

C.  $\frac{6}{13}$

D.  $\frac{7}{13}$

**Answer: D**



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**18.** If  $x_1, x_2, \dots, x_n$  are  $n$  observations such that  $\sum x_i^2 = 400$  and  $\sum x_i = 80$  then the least value of  $n$  is

A. 18

B. 12

C. 15

D. 16

**Answer: D**



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**19.** The mean of four observations is 3. If the sum of the squares of these observations is 48 then their standard deviation is

A.  $\sqrt{7}$

B.  $\sqrt{2}$

C.  $\sqrt{3}$

D.  $\sqrt{5}$



**Answer: C**



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**20.** Two numbers are chosen at random from (1,2,3,4,5,6,7,8) at a time. The probability that smaller of the two numbers is less than 4 is

A.  $\frac{7}{14}$

B.  $\frac{8}{14}$

C.  $\frac{9}{14}$

D.  $\frac{10}{14}$

**Answer: C**



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21. Two fair dice are rolled. The probability of the sum of digits on their faces to be greater than or equal to 10 is

A.  $\frac{1}{5}$

B.  $\frac{1}{4}$

C.  $\frac{1}{8}$

D.  $\frac{1}{6}$

**Answer: D**



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22. A bag contains  $2n + 1$  coins . It is known that  $n$  of these coins have a head on both sides, whereas the remaining  $n + 1$  coins are fair . A coin is picked up at random from the beg and

tossed . If the probability that the toss results in a head is  $\frac{31}{42}$ , then n is equal to

A. 10

B. 11

C. 12

D. 13

**Answer: A**



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**23.** The random variable takes the values 1,2,3,.....m. If

$P(X = n) = \frac{1}{m}$  to each n, then the variance of X is

A.  $\frac{(m + 1)(2m + 1)}{6}$

B.  $\frac{m^2 - 1}{12}$

C.  $\frac{m + 1}{2}$

D.  $\frac{m^2 + 1}{12}$

**Answer: B**



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**24.** If  $X$  is a Poisson variate and  $P(X=1)=2P(X=2)$  then  $P(X=3)=$

A.  $\frac{e^1}{6}$

B.  $\frac{e^2}{2}$

C.  $\frac{e^{-1}}{2}$

D.  $\frac{e^{-1}}{3}$

**Answer: A**



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25. If  $X$  is a random Poisson variate such that  $\alpha = P(X = 1) = P(X = 2)$  then  $P(X=4)=$

A.  $2\alpha$

B.  $\frac{\alpha}{3}$

C.  $\alpha^{-2}$

D.  $\alpha e^2$

**Answer: B**



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26.  $X$  follows a binomial distribution with parameters  $n$  and  $p$

where  $0 < p < 1$ .

If  $\frac{P(X = r)}{P(X = n - r)}$  is independent of  $n$  and  $r$  then  $p =$

A.  $\frac{1}{2}$

B.  $\frac{1}{3}$

C.  $\frac{1}{4}$

D.  $\frac{1}{8}$

**Answer: A**



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27. In an entrance test there are multiple choice questions ,  
then the probability that he was guessing is

A.  $\frac{37}{40}$

B.  $\frac{1}{37}$

C.  $\frac{36}{37}$

D.  $\frac{1}{9}$

**Answer: B**



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**28.** There are four machines and it is known that exactly two of them are faulty . They are tested one by one , in a random order till both the faulty machines are identified . Then , the probability that only two tests are needed is ,

A.  $\frac{1}{3}$

B.  $\frac{1}{6}$

C.  $\frac{1}{2}$

D.  $\frac{1}{4}$

**Answer: A**



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**29.** A fair coin is tossed 100 times . The probability of getting tails an odd number of times is

A.  $\frac{1}{2}$

B.  $\frac{1}{4}$

C.  $\frac{1}{8}$

D.  $\frac{3}{8}$



**Answer: A**



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**30.** A class has fifteen boys and five girls. Suppose three students are selected at random from the class. The probability that there are two boys and one girl is

A.  $\frac{35}{76}$

B.  $\frac{35}{38}$

C.  $\frac{7}{76}$

D.  $\frac{35}{72}$

**Answer: A**



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31. Seven white balls and three black balls are randomly arranged in a row. The probability that no two black balls are placed adjacently is

A.  $\frac{1}{2}$

B.  $\frac{7}{15}$

C.  $\frac{2}{15}$

D.  $\frac{1}{3}$

**Answer: B**



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32. Let  $A$  and  $B$  be events in a sample space  $S$  such that  $P(A)=0.5$  ,  $P(B)=0.4$  and  $P(A \cup B) = 0.6$  . Observe the

following lists :

**List I**

- i)  $P(A \cap B)$
- ii)  $P(A \cap \bar{B})$
- iii)  $P(\bar{A} \cap B)$
- iv)  $P(\bar{A} \cap \bar{B})$

**List II**

- a) 0.4
- b) 0.2
- c) 0.3
- d) 0.1

- A. 

(i)	(ii)	(iii)	(iv)
(1)	(2)	(3)	(4)
- B. 

(i)	(ii)	(iii)	(iv)
(3)	(2)	(4)	(1)
- C. 

(i)	(ii)	(iii)	(iv)
(3)	(2)	(1)	(4)
- D. 

(i)	(ii)	(iii)	(iv)
(3)	(1)	(2)	(4)

**Answer: B**



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**33.** The probability that an individual suffers a bad reaction from an injection is 0.001. The probability that out of 2000

individulas exactly three will suffer bad reaction is

A.  $\frac{1}{e^2}$

B.  $\frac{2}{3e^2}$

C.  $\frac{8}{3e^2}$

D.  $\frac{4}{3e^2}$

**Answer: D**



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**34.** A urn A contains 3 white and 5 black balls. Another urn B contains 6 white and 8 black balls. A ball is picked from A at random and then transferred to B. Then a ball is picked at random from B. The probability that it is a white ball is

A.  $\frac{14}{40}$

B.  $\frac{15}{40}$

C.  $\frac{16}{40}$

D.  $\frac{17}{40}$

**Answer: D**



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**35.** If  $A(i=1,2,3,\dots,n)$  are  $n$  independent events with  $P(A) = \frac{1}{1+i}$

for each  $i$ , then the probability that none of  $A$ , occur is :

A.  $\frac{n-1}{n+1}$

B.  $\frac{n}{n+1}$

C.  $\frac{n}{n+2}$

D.  $\frac{1}{n+1}$

**Answer: D**

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**36.** Suppose that A and B are two independent events such that  $P(A \cap B) = \frac{3}{25}$  and  $P(A) = \frac{8}{25}$  Then  $P(B) =$

A.  $\frac{11}{25}$

B.  $\frac{3}{11}$

C.  $\frac{1}{11}$

D.  $\frac{9}{11}$

**Answer: A**

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37. Suppose that a random variable  $X$  follows Poisson distribution . If  $P(X=1)=P(X=2)$  then  $P(X=5)=$

A.  $\frac{2}{3}e^{-2}$

B.  $\frac{3}{4}e^{-2}$

C.  $\frac{4}{15}e^{-2}$

D.  $\frac{7}{8}e^{-2}$

**Answer: C**



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38. If the mean and variance of a binomial variable  $X$  are 2 and 1 respectively, then  $P(X \geq 1) =$

A.  $\frac{2}{3}$

B.  $\frac{15}{16}$

C.  $\frac{7}{8}$

D.  $\frac{4}{5}$

**Answer: B**



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**39.** If A and B are events of a random experiment such that

$$P(A \cup B) = \frac{4}{5}, P(\bar{A} \cup \bar{B}) = P(\bar{A} \cap \bar{B}) = \frac{7}{10} \text{ and } P(B) = \frac{2}{5}$$

, then P(A) equal

A.  $\frac{9}{10}$

B.  $\frac{8}{10}$



C.  $\frac{7}{10}$

D.  $\frac{3}{5}$

**Answer: D**



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**40.** The probability of choosing randomly a number  $c$  from the set  $\{1,2,3,\dots,9\}$  such that the quadratic equation

$x^2 + 4x + c = 0$  has real roots is

A.  $\frac{1}{9}$

B.  $\frac{2}{9}$

C.  $\frac{3}{9}$

D.  $\frac{4}{9}$

Answer: D



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41. Suppose that  $E_1$  and  $E_2$  are two events of a random experiment such that

$$P(E_1) = \frac{1}{4}, P(E_2 | E_1) = \frac{1}{2} \text{ and } P(E_1 | E_2) = \frac{1}{4}.$$

Observe the lists given below :

**List I**

- A)  $P(E_2)$
- B)  $P(E_1 \cup E_2)$
- C)  $P(\overline{E_1} | \overline{E_2})$
- D)  $P(E_1 | E_2)$

**List II**

- i)  $1/4$
- ii)  $5/8$
- iii)  $1/8$
- iv)  $1/2$
- v)  $3/8$
- vi)  $3/4$

The correct matching of the list I from the list II is :

- A.      (A)   (B)   (C)   (D)  
(a)   (ii)   (iii)   (vi)   (i)

- B.         $(A)$     $(B)$     $(C)$     $(D)$   
       $(a)$     $(iv)$     $(v)$     $(vi)$     $(i)$
- C.         $(A)$     $(B)$     $(C)$     $(D)$   
       $(a)$     $(iv)$     $(ii)$     $(vi)$     $(i)$
- D.         $(A)$     $(B)$     $(C)$     $(D)$   
       $(a)$     $(i)$     $(ii)$     $(iii)$     $(i)$

**Answer: C**



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**42.**  $X$  is a binomial variate with parameters  $n = 6$  and  $p$ . If  $4P(X = 4) = P(X = 2)$ , then  $p$  is

- A.  $\frac{1}{3}$
- B.  $\frac{1}{2}$
- C.  $\frac{2}{3}$
- D.  $\frac{3}{4}$

**Answer: A**



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**43.** If A and B are two independent events of a random experiment such that  $P(A \cap B) = \frac{1}{6}$  and  $P(\bar{A} \cap \bar{B}) = \frac{1}{3}$ , then  $P(A) =$

A.  $\frac{1}{4}$

B.  $\frac{1}{3}$

C.  $\frac{1}{2}$

D.  $\frac{2}{3}$

**Answer: A**



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44. Let  $S$  be the sample space of the random experiment of throwing simultaneously two unbiased dice with six faces (numbered 1 to 6) and let  $E_k = \{(a,b) \in S : ab = k\}$  for  $k \geq 1$

A.  $p_1 < p_{30} < p_4 < p_6$

B.  $p_{36} < p_6 < p_2 < p_4$

C.  $p_1 < p_{11} < p_4 < p_6$

D.  $p_{36} < p_{11} < p_6 < p_4$

**Answer: A:C**



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45. For  $L=1,2,3$  the box  $B_k$  contains  $k$  red balls and  $(k+1)$  white balls. Let  $P(B_1) = \frac{1}{2}$ ,  $P(B_2) = \frac{1}{3}$ ,  $P(B_3) = \frac{1}{6}$ . A box is

selected at random and a ball is drawn from it . If a red ball is drawn, then the probability that it has come from box  $B_2$  is

A.  $\frac{35}{78}$

B.  $\frac{14}{39}$

C.  $\frac{10}{13}$

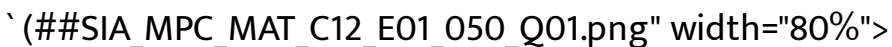
D.  $\frac{12}{13}$

**Answer: A**



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**46.** The distribution of a random variable X is given below



The value of k is

A.  $\frac{1}{10}$

B.  $\frac{2}{10}$

C.  $\frac{3}{10}$

D.  $\frac{7}{10}$

**Answer: B**



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47. If  $X$  is a poisson distribution such that

$P(X=1)=P(X=2)$  then,  $P(X=4)=$

A.  $\frac{1}{2e^2}$

B.  $\frac{1}{3e^2}$

C.  $\frac{2}{3e^2}$

D.  $\frac{1}{e^2}$

**Answer: C**

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**48.** Four numbers are chosen at random from  $(1,2,3,\dots,40)$  . The probability that they are not consecutive is

A.  $\frac{1}{2470}$

B.  $\frac{4}{7069}$

C.  $\frac{2469}{2470}$

D.  $\frac{7965}{7969}$

**Answer: C**

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49. If A and B are mutually exclusive events with  $P(B) \neq 1$  then  $P(A | \bar{B})$  is equal to {Here  $\bar{B}$  is the complement of the event B)

A.  $\frac{1}{P(B)}$

B.  $\frac{1}{1 - P(B)}$

C.  $\frac{P(A)}{P(B)}$

D.  $\frac{P(A)}{1 - P(B)}$

**Answer: D**



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50. A bag contains 6 white and 4 black balls. Two balls are drawn at random. The probability that they are of the same colour is

A.  $\frac{1}{15}$

B.  $\frac{2}{5}$

C.  $\frac{4}{15}$

D.  $\frac{7}{15}$

**Answer: D**



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51. The mean and standard deviation of a binomial variate  $X$  are 4 and  $\sqrt{3}$  respectively. Then  $P(X = \geq 1) =$

A.  $1 - \left(\frac{1}{4}\right)^{16}$

B.  $1 - \left(\frac{3}{4}\right)^{16}$

C.  $1 - \left(\frac{2}{3}\right)^{16}$

D.  $1 - \left(\frac{1}{3}\right)^{16}$

**Answer: B**



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**52.** In the random experiment of tossing two unbiased dice, let E be the event of getting the sum 8 and F be the event of getting even numbers on both the dice. Then ,

Statement I      Statement II

$$P(E) = \frac{7}{36} \quad P(F) = \frac{1}{3}$$

Which of the following is a correct statement ?

A. Both I and II are true

B. Neither I nor II is true

C. I is true , II is false

D. I is false , II is true

**Answer: B**



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**53.** Seven balls are drawn simultaneously from a bag containing 5 white and 6 green balls. The probability of drawing 3 white and 4 green balls is

A.  $\frac{7}{11c_7}$

B.  $\frac{5c_3 + 6c_4}{11c_7}$

C.  $\frac{{}^5C_2 {}^6C_2}{{}^{11}C_7}$

D.  $\frac{{}^6C_3 {}^5C_4}{{}^{11}C_7}$

**Answer: C**



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**54.** In a book of 500 pages , it is found that there are 250 typing errors . Assume that Poisson law holds for the number of errors per page . Then, the probability that a random sample of 2 pages will contains no error is

A.  $e^{-0.3}$

B.  $e^{-0.5}$

C.  $e^{-1}$

D.  $e^{-2}$

**Answer: C**



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55. If A and B are two independent events such that

$P(B) = \frac{2}{7}$ ,  $P(A \cup B^c) = 0.8$ , then  $P(A)$  is equal to

A. 0.1

B. 0.2

C. 0.3

D. 0.4

**Answer: C**



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56. A number  $n$  is chosen at random from  $(1,2,3,4,\dots,1000)$ . The probability that  $n$  is a number that leaves remainder 1 when divided by 7 is

A.  $\frac{71}{500}$

B.  $\frac{143}{1000}$

C.  $\frac{72}{500}$

D.  $\frac{71}{1000}$

**Answer: B**



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57. A coin and six faced die, both unbiased are thrown simultaneously . The probability of getting a head on the coin and an odd number on the die is

A.  $\frac{1}{2}$

B.  $\frac{3}{4}$

C.  $\frac{1}{4}$

D.  $\frac{2}{3}$

**Answer: C**



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58. A number  $n$  is chosen at random from

$S = \{1,2,3,\dots, 50\}$  Let



$$A = \left\{ n \in S : n + \frac{50}{n} > 27 \right\}$$

$B = \{n \in S : n \text{ is a prime}\}$  and

$C = \{n \in S : n \text{ is a square}\}$  . Then , correct order of their probabilities is

A.  $P(A) < P(B) < P(C)$

B.  $P(A) > P(B) > P(C)$

C.  $P(B) < P(A) < P(C)$

D.  $P(A) > P(C) > P(B)$

**Answer: C**



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**59.** Box A contains 2 black and 3 red balls , while box B contains 3 black and 4 red balls . Out of these two boxes one

is selected at random and the probability of choosing box A is double that of box B . If a red ball is drawn from the selected box , then the probability that it has come from box B, is

A.  $\frac{21}{41}$

B.  $\frac{10}{31}$

C.  $\frac{12}{31}$

D.  $\frac{13}{41}$

**Answer: B**



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**60.** If the range of random variable X is {0,1,2,3,4....} with

$$P(X = k) = \frac{(k + 1)a}{3^k} \text{ for } k \geq 0, \text{ then } a \text{ is equal to}$$

A.  $\frac{2}{3}$

B.  $\frac{4}{9}$

C.  $\frac{8}{27}$

D.  $\frac{16}{81}$

**Answer: B**



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**61.** For a Binomial variate  $X$  with  $n = 6$  , if  $P(X = 2) = 9 P(X = 4)$ , then its variance is ,

A.  $\frac{8}{9}$

B.  $\frac{1}{4}$

C.  $\frac{9}{8}$

D. 4

**Answer: C**



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**62.** Suppose E and F are two events of a random experiment  
If the probability of occurrence of E is  $\frac{1}{5}$  and the  
probability of occurrence of F given E is  $\frac{1}{10}$ , then the  
probability of non-occurrence of at least one of the events E  
and F, is

A.  $\frac{1}{18}$

B.  $\frac{1}{2}$

C.  $\frac{49}{50}$

D.  $\frac{1}{50}$

**Answer: C**



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**63.** Six faces of an unbiased die are numbered with 2,3,5,7,11 and 13 . If two such dice are thrown , then the probability that the sum on the uppermost faces of the dice is an odd number , is

A.  $\frac{5}{18}$

B.  $\frac{5}{36}$

C.  $\frac{13}{18}$

D.  $\frac{25}{36}$

**Answer: A**



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64. If  $X$  is a Poisson variate with  $P(X = 0) = 0.8$  , then the variance of  $X$  is .

A.  $\log_e 20$

B.  $\log_{10} 20$

C.  $\log_e 5/4$

D. 0

**Answer: C**



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65. An unbiased coin is tossed to get 2 points for turning up a head and one point for the tail . If three unbiased conis are

tossed simultaneously , then the probability of getting a total of odd number of points is ,

A.  $\frac{1}{2}$

B.  $\frac{1}{4}$

C.  $\frac{1}{8}$

D.  $\frac{3}{8}$

**Answer: A**



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**66.** If  $P(A \cup B) = 0.8$ ,  $P(A \cap B) = 0.3$  then

$$P(\bar{A}) + P(\bar{B}) =$$

A. 0.3

B. 0.5

C. 0.8

D. 0.9

**Answer: D**



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**67.** An unbiased coin is tossed  $n$  times. If the probability of getting atleast one head is greater than 0.8, then the least value of  $n$  is

A. 2

B. 3

C. 4



D. 5

**Answer: B**



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**68.** A bag X contains 2 white and 3 black balls and another bag Y contains 4 white 2 black balls . One bag is selected at random and a ball is drawn from it . Then , the probability for the ball chosen to be white is ,

A.  $\frac{2}{15}$

B.  $\frac{7}{15}$

C.  $\frac{8}{15}$

D.  $\frac{14}{15}$

**Answer: C**



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**69.** For a Poisson variate  $X$  , if  $P(X = 2) = 3 P(X = 3)$  then the mean of  $X$  is

A. 1

B.  $\frac{1}{2}$

C.  $\frac{1}{3}$

D.  $\frac{1}{4}$

**Answer: A**



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70. A random variate  $X$  takes the values 0,1,2,3 and its mean is 1.3 . If  $P(X = 3) = 2P(X = 1)$  and  $P(X = 2) = 0.3$  , then  $P(X = 0)$  is equal to

A. 0.1

B. 0.2

C. 0.3

D. 0.4

**Answer: D**



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71. A bag contains 5 black balls 4 white balls and 3 red balls . If a ball is selected at random , the probability that it is a black or a red ball, is

A.  $\frac{1}{3}$

B.  $\frac{1}{4}$

C.  $\frac{5}{12}$

D.  $\frac{2}{3}$

**Answer: D**



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**72.** The probability of getting qualified in IIT JEE EAMCET by student are respectively  $\frac{1}{5}$  and  $\frac{3}{5}$ . The probability that the student gets qualified for at least one of these tests, is

A.  $\frac{3}{25}$

B.  $\frac{8}{25}$

C.  $\frac{17}{25}$

D.  $\frac{22}{25}$

**Answer: C**



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**73.** One die and a coin (both unbiased) are tossed simultaneously . The probability of getting 5 on the top of the die and tail on the coin , is

A.  $\frac{1}{2}$

B.  $\frac{1}{12}$

C.  $\frac{1}{6}$

D.  $\frac{1}{8}$

**Answer: B**



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74. In a Binomial distribution, the probability of getting success is  $\frac{1}{4}$  and the standard deviation is 3 . Then its mean is

A. 6

B. 8

C. 10

D. 12

**Answer: D**



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75. If the mean of a Poisson distribution is  $\frac{1}{2}$ , then the ratio of  $P(X = 3)$  to  $P(X = 2)$  is

A. 1 : 2

B. 1 : 4

C. 1 : 6

D. 1 : 8

**Answer: C**



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76. A random variable  $X$  takes the values 0, 1 and 2. If  $P(X = 1) = P(X = 2)$  and  $P(X = 0) = 0.4$ , then the mean of random variable  $X$  is

A. 0.2

B. 0.7

C. 0.5

D. 0.9

**Answer: D**



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77. In a competition A,B,C are participating . The probability that A wins is twice that of B , the probability that B wins is twice that of C, then probability that A losses is

A.  $\frac{1}{7}$

B.  $\frac{2}{7}$



C.  $\frac{4}{7}$

D.  $\frac{3}{7}$

**Answer: D**



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**78.** The probability that a number selected at random from the set of numbers  $\{1, 2, 3, \dots, 100\}$  is a cube, is

A.  $\frac{1}{25}$

B.  $\frac{2}{25}$

C.  $\frac{3}{25}$

D.  $\frac{4}{25}$

**Answer: A**



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79. The events A and B have probabilities 0.25 and respectively . The probability that both A and B simultaneously is 0.14 , then the probability that n A nor B occurs, is

A. 0,39

B. 0,29

C. 0.11

D. 0.25

**Answer: A**



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80. Two dice are rolled simultaneously . The probability that the sum of the two numbers on the dice is a prime number , is

A.  $\frac{5}{12}$

B.  $\frac{7}{12}$

C.  $\frac{9}{14}$

D. None of these

**Answer: A**



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81. Find the Binomial probability distribution whose mean is 3  
red variance is 2 .

A.  $\left(\frac{2}{3} + \frac{1}{3}\right)^9$

B.  $\left(\frac{5}{3} + \frac{2}{3}\right)^9$

C.  $\left(\frac{3}{2} + \frac{1}{2}\right)^9$

D. None of these

**Answer: A**



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**82.** For a Binomial variate  $X$ , if  $n = 4$  and  $P(X = 4) = 6 P(X = 2)$ ,

then the value of  $p$  is

A.  $\frac{3}{7}$

B.  $\frac{4}{7}$

C.  $\frac{6}{7}$

D.  $\frac{5}{7}$

**Answer: C**



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