RAVI MATHS TUITION CENTER, CHENNAI-82. WHATSAPP - 8056206308

Probability

12th Standard

Maths

10 x 2 = 20

1) Given P(A)=$\frac{1}{2}$,P(B)=$\frac{1}{3}$ and $P(A \cap B) = \frac{1}{6}$ Are the events A and B independent?

2) Given P(A) = 0.2, P(B) = 0.3 and $P(A \cap B) = 0.3$ Find P(A/B)

3) Given P(A) = 0.4, P(B) = 0.7 and P(B/A) = 0.6, Find $P(A \cup B)$

4) If E and F are two events such that $P(E) = \frac{1}{4}$, $P(E) = \frac{1}{2}$ and $P(E \cap F) = \frac{1}{8}$, find

(a) P(E or F)

(b) P(not E and not F).

5) If P(E) =$\frac{6}{11}$, P(F) =$\frac{5}{11}$ and P(E∪F)=$\frac{7}{11}$ then find (a) P(E/F), (b) P(F/E)

6) If P(E) =$\frac{7}{13}$,P(F)=$\frac{9}{13}$ and P(E∩F)=$\frac{4}{13}$,then evaluate :

(a) $P(\overline{E}/F)$

(b) $P(\overline{E}/F)$

7) A couple has 2 children. Find the probability that both are boys, if it is known that (a) one of them is a boy (b) the older child is boys.

8) Evaluate $P(A \cup B)$, if $2P(A) = P(B) = \frac{5}{13}$ and $P\left(\frac{A}{B}\right) = \frac{2}{5}$.

9) State whether the following distribution is a probability distribution of a random variable or not.

x	3	2	1	0	-1
$P(X)$	0.3	0.2	0.4	0.1	0.05

10) If A and B are two independent events such that $P(A) = \frac{1}{7}$ and $P(B) = \frac{1}{6}$, then P $(A' \cap B')$

10 x 3 = 30

11) IF P(A) = $\frac{6}{11}$P(B) = $\frac{5}{11}$and P(A ∪ B) = $\frac{7}{11}$

find:

(i) P(A∩B)

(ii) P(A | B)

(iii) P(B | A)

12) Given two independent events A and B such that P(A) = 0.3, P(B) = 0.6 Find:

(i) P(A and B)

(ii) P(A and not B)

(iii) P(A or B)

(iv) P(neither A nor B).

13) Given that the events A and B are such that P(A) = $\frac{1}{2}$, $P(A \cup B) = \frac{3}{5}$ and P(B) = p. Find p if they are

(i) mutually exclusive

(ii) independent.

14) Out of 9 outstanding students of a school, there are 4 boys and 5 girls. A team of 4 students is to be selected for a quiz competition. Find the probability that 2 boys and 2 girls are selected.

15) A pair of dice is thrown 4 times. If getting a doublet is considered a success, find the probability distribution of the number of success.

16) The probabilities of A,B,C solving a problem are $\frac{1}{3}$, $\frac{2}{7} and \frac{3}{8}$ respectively. If all the three try to solve the problem simultaneously, find the probability that exactly one of them can solve it.

17) A family has 2 children. Find the probability that both are boys, if it is known that (i)atleast one of the children is a boy. (ii)the elder child is a boy.

18) A die is thrown again and again until three sixes are obtained.Find the probability of obtaining the third six in the sixth trial of the die.

19) A couple has 2 children. Find the probability that both are boys, if it is known that :

(i) one of them is a boy

(ii) the elder child is a boy.

20) The random variable X has a probability distribution P(X) of the following form, where k is some number :

$$P(X) = \begin{cases} k, & if \quad x = 0 \\ 2k, & if \quad x = 1 \\ 3k, & if \quad x = 2 \\ 0, & otherwise \end{cases}$$

(i) Find the value of k

(ii) Find P(X< 2)

(iii) Find P(X$\leq$2)

(iv) Find P(X$\geq$2)

5 x 5 = 25

21) An insurance company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of an accidents are 0.01, 0.03 and 0.15 respectively. One of the insured persons meets with an accident. What is the probability that he is a scooter driver?

22) A bag I contains 5 red and 4 white balls and a bag II contains 3 red and 3 white balls. Two balls are transferred from the bag I to the bag II and then one ball is drawn from bag II. If the ball drawn from the bag II is red, then find the probability that one red ball and one white ball are transferred from the bag I to the bag II.

23) A man is known to speak the truth 3 out of 5 times. He throws a die and reports that it is 1. Find the probability that it is actually 1.

24) An item is manufactured by three machines A, Band C.Out of the total number of items manufactured during a specified period, 50% are manufactured on A, 30% on Band 20% on C.2%of the items produced on A and 2%of items produced on B are defective and 3% of these produced on Care defective. All the items are stored at one godown. One item is drawn at random and is found to be defective. What is the probability that it was manufactured on machine A?

25) Suppose a girl throws a die. If she gets a 5 or 6, she tosses a coin three times and notes the number of heads. If she gets 1,2, 3 or 4, she tosses a coin once and notes whether a head or tail is obtained. If she obtained exactly one head, then what. is the probability that she threw 1,2, 3 or 4 with the die?

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