**JNV**

**MODEL QUESTIONS**

**MATHEMATICS: 15 PROBABILITY**

**Class : X**

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| 1 | From a well shuffled pack of cards, a card is drawn at random. Find the probability of getting a black queen. | 1 |
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|  | ANS:     Total number of ways to draw a card = 52 Number of ways to draw a black queen = 2 ∴  Probability of getting a black queen C:\fake\image1.png |  |
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| 2 | A die is thrown once. Find the probability of getting a number less than 3. | 1 |
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|  | ANS:     Total number of ways = 6 Number of ways to get a number less than 3 = 2 ∴  Required probability C:\fake\image2.png |  |
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| 3 | Two coins are tossed simultaneously. Find the probability of getting exactly one head. | 1 |
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|  | ANS:     When two coins are tossed simultaneously Total number of outcomes = {HH, HT, TH, TT} Total number of outcomes = 4 Favourable outcomes = {HT, TH} = 2 Probability of getting exactly one head C:\fake\image3.png |  |
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| 4 | If the probability of winning a game is 0.3, what is the probability of losing it? | 1 |
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|  | ANS:     Probability of winning a game = 0.3 C:\fake\image4.png  Probability of losing the game = 1 – Probability of winning the game = 1 – 0.3 = 0.7 |  |
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| 5 | The probability that it will rain tomorrow is 0.85. What is the probability that it will not rain tomorrow? | 1 |
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|  | ANS:     Probability that it will not rain tomorrow = 1 – Probability that it will rain tomorrow = 1 – 0.85 = 0.15 |  |
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| 6 | A man is know to speak truth 5 out of 6 times. He draws a face card from a pack of 52 playing cards. Find the probability that he reports it is a face card. | 1 |
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|  | ANS:     Here P(man will speak the truth) = C:\fake\image5.png when a face card is drawn from the pack of 52 playing cards then probability of man’s reporting it is a face card. The probability of man speaking the truth = C:\fake\image6.png |  |
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| 7 | A letter is chosen at random from the letters of the word ‘ASSASSINATION’ Find the probability that the letter chosen is a vowel? | 1 |
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|  | ANS:     Total number of letters = 13, Number of vowels = 6 ∴  Probability of drawing a vowel = C:\fake\image7.png |  |
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| 8 | Cards, marked with numbers 5 to 50, are placed in a box and mixed thoroughly. A card is drawn from the box at random. Find the probability that the number on the taken card is (i) a prime number less than 10. (ii) a number which is a perfect square. | 2 |
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|  | ANS:     Total no. of cards = 46 Total no. of ways to select a card = 46 (i) Prime no. less than 10 in these cards are 5, 7 ∴ No. of ways to select a prime no. less than 10 = 2. ∴ Probability that the number on the card is prime C:\fake\image8.png (ii) No. which is a perfect square, i.e. 9, 16, 25, 36, 49. No. of ways to select a card with perfect square = 5. ∴ Probability = C:\fake\image9.png |  |
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| 9 | A pair of dice is thrown once. Find the probability of getting the same number on each dice. | 2 |
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|  | ANS:     Total number of ways to throw a pair of dice = 36 Same number on each dice, i.e. (1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6) ∴ Number of ways of getting the same number on each dice = 6. Required probability = C:\fake\image10.png |  |
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| 10 | From a pack of 52 playing cards, jacks, queens, kings and aces of red colour are removed. From the remaining a card is drawn at random. Find the probability that the card drawn is (i) a black queen (ii) a red card (iii) a black jack (iv) a picture card (jacks, queens and kings are picture cards) | 3 |
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|  | ANS:     From the total playing 52 cards, red coloured jacks, queen, kings and aces are removed (i.e., 2 jacks, 2 queens, 2 kings, 2 aces) ∴ Remaining cards = 52 – 8 = 44 (i) Favourable cases for a black queen are 2 (i.e., queen of club or spade) ∴  Probability of drawing a black queen = C:\fake\image11.png (ii) Favourable cases for red cards are 26 – 8 = 18 (as 8 cards have been removed) (i.e. 9 diamonds + 9 hearts) ∴  Probability of drawing a red card = C:\fake\image12.png (iii) Favourable cases for a black jack are 2 (i.e. jacks of club or spade) ∴  Probability of drawing a black jack = C:\fake\image13.png (iv) Favourable cases for a picture card are 6 (i.e. 2 black jacks, queens and kings each) ∴  Probability of drawing a picture card = C:\fake\image14.png |  |
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| 11 | A bag contains 12 balls out of which x are white.  (i) If one ball is drawn at random, what is the probability that it will be a white ball? (ii) If 6 more white balls are put in the bag, the probability of drawing a white ball will be double than that in (i). Find x. | 3 |
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|  | ANS:     n(S) = 12 (i) Let A be the event of drawing a white ball n(A) = x, P(A) = C:\fake\image15.png (ii) Number of white balls = x + 6 Total number of balls = 12 + 6 = 18. Let B be the event of drawing a white ball ∴  n(B) = x + 6, P(B) = C:\fake\image16.png According to the question, P(B) = 2P(A) C:\fake\image17.png C:\fake\image18.png  6x + 36 = 18x C:\fake\image19.png  12x = 36  C:\fake\image20.png  x = 3 |  |
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| 12 | In a single throw of two dice, find the probability of: (i) getting a total of 10 (ii) getting a total of 9 or 11 (iii) getting a sum greater than 9 (iv) getting a doublet of even numbers (v) not getting the same number on the two dice. | 4 |
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|  | ANS:     The sample space for single throw of two dice is C:\fake\image21.png Now, (i) P (Total of 10) = C:\fake\image22.png (ii) P (Total of 9 or 11) = C:\fake\image23.png (iii) P (Total greater than 9) = P(Total of 10 or 11 or 12) = C:\fake\image24.png (iv) P (Doublet of even nos.) = C:\fake\image25.png (v) P(not getting the same number on two dice) = 1 – P(getting the same number on two dice) = C:\fake\image26.png |  |
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| 13 | A group consists of 12 persons, of which 3 are extremely patient, other 6 are extremely honest and rest are extremely kind. A person from the group is selected at random. Assuming that each person is equally likely to be selected, find the probability of selecting a person who is (i) extremely patient (ii) extremely kind or honest. Which of the above values you prefer more. | 4 |
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|  | ANS:     Number of extremely patient persons = 3 Number of extremely honest persons = 6 Number of extremely kind persons = 12 – 9 = 3 Total number of ways to select a person = 12 (i) Number of ways to select one extremely patient person = 3 C:\fake\image27.png  Probability of selecting one extremely patient person = C:\fake\image28.png (ii) Number of ways to select one extremely kind or honest person = 6 + 3 = 9 C:\fake\image29.png  Probability of selecting a person Who is extremely kind or honest = C:\fake\image30.png (b) Honesty. |  |
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