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PUNE

NAME of Student : _____

Subject : Mathematics

Chapter Test 19

Class : XII   Max. Marks :- 100

Topic : Probability

JEE MAIN CHAPTER TEST

Marking Scheme:

(i)   Each question is allotted 4 (four) marks for each correct response.

(ii) ¼ (one fourth) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.

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Q.1 A is a 3×3 matrix wit entries from the set $\{-1, 0, 1\}$. Then the probability that A is neither symmetric nor skew-symmetric is –

(A) $\dfrac{3^9 + 3^6 - 3^3 + 1}{3^9}$ (B) $\dfrac{3^9 - 3^6 - 3^3 + 1}{3^9}$

(C) $\dfrac{3^9 - 3^6 + 3^3 + 1}{3^9}$ (D) 1/2

Q.2 The probability of happening an event A in one trial is 0.4. The probability that the event A happens at least once in three independent trials is –

(A) 0.936   (B) 0.784
(C) 0.904   (D) 0.216

Q.3 4 gentlemen and 4 ladies take seats at random round a table. The probability that they are sitting alternately is

(A) 4/35   (B) 1/70
(C) 2/35   (D) 1/35

Q.4 Let A and B be two events such that

$P(A) = \dfrac{2}{5}, P(A \cup B) = \dfrac{7}{10}$ and $P(B / A) = \dfrac{1}{2}$, then P (B)=

(A) 1/2   (B) 23/100
(C) 2/5   (D) None of these

Q.5 3 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

Q.6 One hundred cards are numbered from 1 to 100. Find the probability that a card chosen at random has the digit 5.

(A) 19/100   (B) 11/100
(C) 12/100   (D) 1/100

Q.7 One card is drawn from a well-shuffled pack of 52 cards. What is the probability, that it is not the ace of hearts ?

(A) 51/52   (B) 1/52
(C) 1/12   (D) 1/2

Q.8 One of the two events must happen. Given that the chance of one is two-third of the other, the odds in favour of the other are –

(A) 3 : 5   (B) 2 : 5
(C) 3 : 2   (D) None of these

Q.9 In shuffling a pack of cards three are accidentally dropped. The probability that the missing cards are of distinct colours is

(A) $\dfrac{169}{425}$ (B) $\dfrac{165}{429}$

(C) $\dfrac{162}{459}$ (D) $\dfrac{164}{529}$

Q.10 All the letters of the word HAMSANANDI are placed at random in a row. The probability that the word ANAND occurs without getting split is-

(A) 1/42   (B) 1/60
(C) 1/420   (D) None of these

Q.11 If the letter of the word SUCCESS are arranged, then the probability that similar letters occurs together is -

(A) 4/35   (B) 2/35
(C) 1/35   (D) 3/35

Q.12 Two cards are selected at random from a deck of 52 playing cards. The probability that both the cards are greater than 2 but less than 9 is

(A) 46/221   (B) 63/221
(C) 81/221   (D) 93/221

Q.13 The probability that a man can hit a target is 3/4. He tries 5 times. The probability that he will hit the target at least three times is

(A) 291/364   (B) 371/461
(C) 471/502   (D) 459/512

Q.14 A man draws a card from a pack of 52 cards and then replace it. After shuffling the pack, he again draws a card. This he repeats a number of times. The probability that he will draw a heart for the first time in the third draw is -

(A) 9/64   (B) 27/64

(C) $\dfrac{1}{4} \times \dfrac{^{39}C_2}{^{52}C_2}$ (D) None

Q.15 If the probabilities that A and B will die within a year are p and q respectively then the probability that only one of them will be alive at the end of the year is –

(A) p + q   (B) p + q – 2pq
(C) p + q – pq   (D) p + q + pq

Q.16 Out of all the arrangements that can be made taking 5 letters at a time of the word BRILLIANT one is chosen at random. The probability that this will have 5 distinct letters is

(A) 257/502   (B) 252/507
(C) 522 / 705   (D) 255 / 702

Q.17 Two players A and B toss 4 coins and 3 coins respectively. The probability that both of them get the same number of heads is

(A) 35 / 256   (B) 35 / 128
(C) 1 / 16   (D) 15 / 128

Q.18 If the letters of INTERMEDIATE are arranged, then the probability no two E's occur together is -

(A) 7/11   (B) 5/11
(C) 2/11   (D) 6/11

Q.19 Out of 20 consecutive numbers, three are chosen at random. The probability that their sum is odd is the same as that their sum is even.
(A) 1/2   (B) 1/4
(C) 1/3   (D) 1/8

Q.20 A letter is taken from the word ASSISTANT and another from the word STATISTICS. What is the probability that both the letters are the same ?
(A) 1/45   (B) 17/70
(C) 19/90   (D) 13/90

For Q.21-Q.25 :
The answer to each question is a NUMERICAL VALUE.

Q.21 Three people each flip two fair coins. The probability that exactly two of the people flipped one head and one tail, is (X/8). Find the value X.

Q.22 A number is chosen form each of two sets
A = {1, 2, 3, 4, 5, 6, 7, 8} and B = {8, 7, 6, 5, 4, 3, 2, 1}.
If p_1 is the probability that the sum of the numbers is 9 and p_2 is the probability that sum of the numbers is 7, then
$p_1 + p_2 = X / 32$. Find the value of X.

Q.23 The probability that the number formed by taking all the digits 1, 2, 3, 4, 5 is divisible by 4 is (1/X). Find the value of X.

Q.24 India and Pakistan play a 5 match test series of hockey, the probability that India wins at least three matches is (1/X). Find the value of X.

Q.25 The probability that any two different cards of a well-shuffled deck of 52 cards will be together in the deck if their suit is not considered is (X/13). Find the value of X.