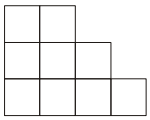
Shiksha Classes Bhandara

Mathematics **Topic : Permutations and Combinations** **MM 100**

Q.1 A forecast is to be made of the results of five cricket matches , each of which can be a win or a draw or a loss for Indian team.
Let p = number of forecasts with exactly 1 error
q = number of forecasts with exactly 3 error and
r = number of forecasts with all five errors
then the incorrect statement is –
(A) $8p = 5r$ (B) $2q = 5r$
(C) $8p = q$ (D) $2(p + r) > q$

Q.2 Number of ways in which 15 indistinguishable oranges can be distributed in 3 different boxes so that every box has atmost 8 oranges, is –
(A) 52 (B) 108
(C) 76 (D) 28

Q.3 The number of ways in which 5 X's can be placed in the squares of the figure so that no horizontal row remains empty is –



(A) 97 (B) 98
(C) 100 (D) 126

Q.4 The number of ways of selecting exactly 4 fruits out of 4 apples, 5 mangoes, 6 oranges is –
(A) 10 (B) 15
(C) 20 (D) 25

Q.5 The number of ten digit numbers that contain only 2 and 3 as its digits, but no any pair wise 3's joins together, is
(A) 145 (B) 143
(C) 129 (D) None of these

Q.6 There are n white different and n black different balls marked 1, 2, 3, . . ., n. The number of ways in which we can arrange these balls in a row so that neighboring balls are of different colours is
(A) n! (B) (2n)!
(C) $2(n!)^2$ (D) $\frac{(2n)!}{(n!)^2}$

Q.7 3 Indian and 3 American men and their wives are to be seated round a circular table. Let
m denotes the number of ways when the Indian couples are together and
n denotes the number of ways when all the six couples are together.
If m = kn then k equals –
(A) 36 (B) 42
(C) 45 (D) 48

Q.8 The word 'PATALIPUTRA' without changing the relative order of the vowels and consonants then how many words can be formed is
(A) 3600 (B) 3300
(C) 6300 (D) none of these

Q.9 The number of ways in which 7 different books can be given to 5 students if each can receive none, one or more books is
(A) 5^7 (B) 7^5
(C) $11C_5$ (D) 12!

Q.10 The number of three digit numbers having only two consecutive digits identical is
(A) 153 (B) 162
(C) 180 (D) 161

Q.11 Let there be 9 fixed points on the circumference of a circle. Each of these points is joined to every one of the remaining 8 points by a straight line and the points are so positioned on the circumference that atmost 2 straight lines meet in any interior point of the circle . The number of such interior intersection points is
(A) 126 (B) 351
(C) 756 (D) none of these

Q.12 In a jet there are 3 seats in front and 3 in the back. Number of different ways can six persons of different heights be seated in the jeep, so that every one in front is shorter than the person directly behind is –
(A) 90 (B) 60
(C) 54 (D) 15

Q.13 The letters of the word TOUGH are written in all possible orders and these words are written out as in a dictionary, then the rank of the word TOUGH is
(A) 120 (B) 88
(C) 89 (D) 90

Q.14 A shopkeeper has 10 copies of each of nine different books, then number of ways in which atleast one book can be selected is–
(A) $9^{11} - 1$ (B) $10^{10} - 1$
(C) $11^9 - 1$ (D) 10^9

Q.15 The number of ways in which a mixed double tennis game can be arranged from amongst 9 married couple if no husband and wife plays in the same game is
(A) 756 (B) 3024
(C) 1512 (D) 6048

Q.16 In a conference 10 speakers are present. If S_1 wants to speak before S_2 and S_2 wants to speak after S_3 , then the number of ways all the 10 speakers can give their speeches with the above restriction if the remaining seven speakers have no objection to speak at any number is
(A) $^{10}C_3$ (B) $^{10}P_8$
(C) $^{10}P_3$ (D) 10!/3

Q.17 5 Indian and 5 American couples meet at a party & shake hands. If no wife shakes hands with her husband and no Indian wife shakes hands with a male, then the number of hand shakes that takes place in the party is
(A) 95 (B) 110
(C) 135 (D) 150

Q.18 In a college examination, a candidate is required to answer 6 out of 10 question which are divided into two section each containing 5 questions. Further the candidates is not permitted to attempt more than 4 questions from either of the section. The number of ways in which he can make up a choice of 6 question is
(A) 200 (B) 150
(C) 100 (D) 50

Q.19 The number of three digit numbers of the form xyz such that $x < y$ and $z \le y$ is

(A) 276 (B) 285

(C) 240 (D) 244

Q.20 From 6 boys and 7 girls a committee of 5 is to be formed so as to include atleast one girl. The number of ways this can be done is

(A) $^{13}C_4$ (B) $^{6}C_4 \cdot {}^{7}C_1$

(C) $7 \cdot {}^{6}C_4$ (D) $^{13}C_5 - {}^{6}C_1$

For Q.21-Q.25 :

The answer to each question is a NUMERICAL VALUE.

Q.21 There are 8 points in a plane, out of these 4 are collinear. The number of triangle obtained by joining these is –

Q.22 Let there be $n \ge 3$ circles in a plane. The value of n for which the number of radical centres, is equal to the number of radical axes is (Assume that all radical axes and radical centre exist and are different)

Q.23 Every body in a room shakes hands with every else. If total number of hand-shaken is 66, then number of persons in the room is –

Q.24 Two tour guides are leading 6 tourist. The guides decide to split up. Each tourist must choose one of the guides, but with the stipulation that each guide must take at least one tourist. Number of possible different groupings of guides and tourist is –

Q.25 The total number of selection of at least (n + 1) things from (2n + 1) different things is 256. Then the value of n is–