CLASS XI – MATHEMATICS – CHAPTER 07

PERMUTATION AND COMBINATIONS

Name: Date:

Q01. Evaluate $4! - 3!$.

Q02. If ${}^nC_a = {}^nC_b$ find n

Q03. The value of 0! .

Q04. Given 5 flags of different colours here many different signals can be generated if each signal requires the use of 2 flags. One below the other

Q05. How many 4 letter code can be formed using the first 10 letter of the English alphabet, if no letter can be repeated?

Q06. How many words, with or without meaning can be made from the letters of the word MONDAY. Assuming that no. letter is repeated, it

(i) 4 letters are used at a time (ii) All letters are used but first letter is a vowel?

Q07. Prove that ${}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r$

Q08. A bag contains 5 black and 6 red balls determine the number of ways in which 2 black and 3 red balls can be selected.

Q09. In how many ways can 5 girls and 3 boys be seated in a row so that no two boys are together?

Q10. How many words, with or without meaning, each of 3 vowels and 2consonants can be formed from the letters of the word INVOLUTE .

Q11. A group consists of 4 girls and 7 boys. In how many ways can a team of 5members be selected if the team has

(i) no girl? (ii) at least one boy and one girl? (iii) at least 3 girls?

Q12. Find the number of words with or without meaning which can be made using all the letters of the word AGAIN. If these words are writer as in a dictionary, what will be the 49^{th} word?

Q13. A coin is tossed 3 times and the outcomes are recorded. How many possible out comes are there?

Q14. Compute $8!/(6! \times 2!)$

Q15. If ${}^nC_8 = {}^nC_2$. find ${}^nC_2$.

Q16. In how many ways of selecting 9 balls from 6 red balls, 5 white balls and 5 blue balls if each selection consists of 3 balls of each colours.

Q17. Find, r if ${}^5C_r = {}^6C_{r-1}$

Q18. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements

(i) do the words start with P (ii). do all the vowels always occur together

Q19. Find n if $^{n-1}P_3 : {}^nP_4 = 1: 9$

Q20. In how many ways can one select a cricket team of eleven from 17 players in which only 5 players can bowl if each cricket team of 11 must include exactly 4 bowlers?

Q21. How many numbers greater than 1000000 can be formed by using the digits 1, 2, 0, 2, 4, 2, 4?

Q22. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together?

Q23. What is the number of ways of choosing 4 cards from a pack of 52 playingcards? In how many of there

(i) Four cards one of the same suit (ii) Cards are of the same colour

(iii) Are face cards. (iv) Two are red cards & two are black cards.

(v) Four cards belong to four different suits

Q24. If $^n P_r = {}^nP_{r-1}$ and $^nC_r = {}^nC_{r-1}$ find the value of n and r.

Q25. If (1/6!) +(1/7!) = (x/8!) find x.

Q26. Write relation between and ^nP_r and ^nC_r

Q27. What is n!

Q28. If $^nC_0 = 1$ what is the value of $^{99}C_0$

Q29. How many words, with or with not meaning each of 2 vowels and 3 consonants can be flamed from the letter of the word DAUGHTER?

Q30. The English alphabet has 5 vowels and 21 consonants. How many words with two different vowels and 2 different consonants can be flamed from the alphabet?

Q31. In how many of the distinct permutations of the letters in MISSISSIPPI do the four I's not come together?

Q32. In how many ways can 4 red, 3 yellow and 2 green discs be arranged in a row if the discs of the same colors are in distinguishable?

Q33. Find the number of permutations of the letters of the word ALLAHABAD.

Q34. How many 4 letter code can be formed using the first 10 letters of the English alphabet if no letter can be repeated?

Q35. Find the value of n such that

(i) $^nP_5 = 42{}^nP_3$,n > 4 (ii) $^nP_4 / {}^{n-1}P_4 = 5/3$, n > 4

Q36. A committee of 7 has to be farmed from 9 boys and 4 girls in how many ways can this be done when the committee consists of

(i) Exactly 3 girls? (ii) Attest 3 girls? (iii) Almost 3 girls?

Q37. Convert the following products into factorials $5 \times 6 \times 7 \times 8 \times 9$

Q38. Evaluate $n!/(n - r)!$,when $n = 5, r = 2$

Q39. Evaluate $^{15}C_8 + {}^{15}C_9 - {}^{15}C_6 + {}^{15}C_7$

Q40. What is the value of $^nC_0 + {}^nC_1 + {}^nC_2 + \ldots\ldots\ldots + {}^nC_n$

Q41. Find n if $^{2n}C_3 : {}^nC_3 = 11 : 1$

Q42. Determine the number of ways of choosing 5 cards out of Adele of 52 cards which include exactly one ace.

Q43. How many numbers greater than 56000 and formed by using the digits 4,5,6,7,8, no digit being repeated in any number?

Q44. Find, n if $n!/2!(n-2)!$ and $n!/(n-4)!$ are in the ratio 2 : 1.

Q45. Prove that $2n! = 1.3.5\ldots\ldots.(2n - 1).2^n.n!$

Q46. How many 4 letter words with or without meaning, can be formed out of the letters of the word 'LOGARITHMS', if repetition of letters is not allowed?

Q47. In how many ways can final eleven be selected from 15 cricket players' if

(i) there is no restriction (ii) one of then must be included

(iii) cone of them, who is in bad form, must always be excluded

(iv) Two of then being leg spinners, one and only one leg spinner must be included?

Q48. How many four letter words can be formed using the letters of the letters ofthe word 'FAILURE' so that

(i) F is included in each word (ii) F is excluded in each word.

Q49. Evaluate $^{10}C_7 + {}^{10}C_6$.

Q50. If $1 \le r \le n$ then what is the value of $n/r^{n-1}C_{r-1}$

Q51. How many 3 digit numbers can be formed by using the digits 1 to 9 if no. digit is Repeated.

Q52. Convert into factorial 2.4.6.8.10.12

Q53. How many words with or without meaning can be formed using all the letters of the word 'EQUATION' at a time so that vowels and consonants occur together.

Q54. From a class of 25 students 10 are to be chosen for an excursion Party. There are 3 students who decide that either all of them will join or none of them will join. In how many ways can excursion party be chosen?

Q55. Find the number of ways of selecting 9 balls from 6 red balls, 5 white balls and 5 blue balls if each selection consists of 3 balls of each colour.

Q56. Find the number of 3 digit even number that can be made using the digits 1, 2, 3, 4, 5, 6, 7, if no digit is repeated?

Q57. Prove that the productr of consecutive positive integer is divisible by r [4]

Q58. A committee of 5 is to be formed out of 6 gents and 4 Ladies. In how manyways this can be done, when

(i) at least two ladies are included? (ii) at most two ladies are included?

Q59. In how many ways can the letters of the word PERMUTATIONS be arranged ifthe

(i) words start with P and with S (ii) vowels are all together

(iii) There are always 4 letters between P and S?