UNIT 4: PERMUTATION AND COMBINATION

TUTORIAL 10-11

Q1. How many 4 letter code can be formed using the first 10 letters of the English alphabet, if no letter can be repeated? Ans: 5040

Q2. How many 5 digit telephone numbers can be constructed using the digits 0 to 9 if each number starts with 67 and no digit appears more than once. Ans: 336

Q3. Given 5 flags of different colors, how many different signals can be generated if each signal requires the use of 2 flags, one below the other? Ans: 20

Q4. Evaluate

a. $7!$ Ans: 5040

b. $7!–5!$ Ans: 4920

c. $\dfrac{12!}{(10!)(2!)}$ Ans: 66

Q5. If $\dfrac{1}{8!}+\dfrac{1}{9!}=\dfrac{x}{10!}$ find x Ans: 100

Q6. Evaluate $\dfrac{n!}{(n-r)!}$ when

a. $n=6,\ r=2$ Ans: 30

b. $n=6,\ r=2$ Ans: 15120

Q7. How many 3 digit numbers can be formed by using the digits 1 to 9 if no digit is repeated? Ans: 504

Q8. Find r if $5.{}^4P_r = 6{}^5P_{r-1}$ Ans: $r=3$

Q9. From a committee of 8 persons, in how many ways can we choose a chairman and a vice chairman assuming one person cannot hold more than one position?
Ans: 56

Q10. How many words, with or without meaning can be formed using all the letters of the word EQUATION, using each letter exactly once? Ans: 40320

Q11. How many words, with or without meaning can be made from the letters of the word MONDAY assuming that no letter is repeated if

a. 4 letters are used at a time. Ans: 360

b. All letters are used at a time. Ans: 720

c. All letters are used but first letter is a vowel? Ans: 240

Q12. In how many ways can the letters of the PERMUTATIONS be arrange if the

a. Words start with P and each end with S — Ans: 1814400
b. Vowels are all together — Ans: 2419200
c. There always 4 letters between P and S — Ans: 25401600

Q13. A committee of 3 persons is to be constituted from a group of 2 men and 3 women

a. In how many ways can this be done?
b. How many of these committees would consists of 1 man and 2 women?

Ans: a) 10 b) 6

Q14. If ${}^nC_8 = {}^nC_2$, find ${}^nC_2$. Ans: 45

Q15. Determine the number of 5 cards combinations out of a deck of 52 cards if there is exactly one ace in each combination. Ans: 778320

Q16. 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. Ans: 200

Q17. How many numbers greater than 1000000 can be formed by using the digits 1, 2, 0, 2, 4, 2, 4? Ans: 360

Q18. A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consists of

a. Exactly 3 girls — Ans: 504
b. At least 3 girls — Ans: 588
c. At most 3 girls — Ans: 1632

Q19. The English alphabet has 5 vowels and 21 consonants. How many words with 2 different vowels and 2 different consonants can be formed from the alphabet?

Ans: 50400

Q20. Determine the number of 5 card combinations out of a deck of 52 cards if each selection of 5 cards has exactly 1 king. Ans: ${}^4C_1 \times {}^{48}C_4$

Q21. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together? Ans: 151200