School of Computer Science Engineering and Technology
Bennett University

Course Code: CBCA104 **Course Name:** Mathematics Foundations
Academic Year: 2022-23 **Semester:** Odd
Date: 2^{nd} December 2022 **Type:** Core (L-T-P: 3-1-0)

Tutorial Sheet-7

Topics Covered: Permutations and Combinations.

1) How many 4-letter codes can be formed using the first 10 letters of the English alphabet, if no letter can be repeated?

2) If $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$, then find x.

3) Evaluate $\frac{n!}{(n-r)!}$ if $n = 7$ and $r = 4$.

4) (a) How many car number plates can be made if each plate contains two different letters followed by three different digits?
   (b) How many of these number plates begin with AB?

5) A maths debating team consists of 4 speakers.
   (a) In how many ways can all 4 speakers be arranged in a row for a photo?
   (b) How many ways can the batch representative be chosen?

6) How many chords can be drawn through 21 points on a circle?

7) Find n if (i) ${}^{2n}C_3 :^n C_3 = 12 : 1$ (ii) ${}^{2n}C_3 :^n C_3 = 10 : 1$

8) 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.