

3. SYLLABUS WITH OBJECTIVES AND NOTES ON TEACHING

UNIT 1: Permutations and Combinations

Specific Objectives:

- To learn the fundamental Principle of Multiplication
- To learn the fundamental Ideas of permutations and combinations.
- To have simple applications to problems including arrangements and selections

	Detailed Content	Time Ratio	Notes on Teaching
12	1.1 The fundamental Principle of Multiplication	1	<p>Students may take the route diagram:</p> <div style="text-align: center;"> </div> <p>There are 3 routes from A to B and 4 routes from B to C How many routes are there from A to C via B?</p> <p>The fundamental Principle of Multiplication should be stated and extended to include the case where several operations are performed in succession.</p> <p>Teachers may take 3 letters, a, b, c say and consider their arrangements and selections. Hence distinguish between permutation and combination.</p>
	1.2 Definitions of permutations and Combinations and their distinctions	1	
	1.3 The symbol $n!$, P_r^n and C_r^n	2	<p>Students should learn the relation $C_r^n = \frac{P_r^n}{r!}$ by using simple example and then by formulae of P_r^n and C_r^n.</p> <p>The following useful relations should be stated and proved:</p> $C_r^n = C_{n-r}^n$ $C_r^n + C_{r-1}^n = C_r^{n+1}$
	1.4 Simple applications of Permutations and combinations to problems	3	<p>(a) Students are also expected to tackle simple problems involving the number of ways of arranging n unlike objects in a line, and</p> <p>(b) the number of ways of arranging in a line n objects of which p are of one type, q are of another type, r are of a third type, and so on.</p>
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