SRM Institute of Science and Technology
Department of Mathematics
18MAB302T-Discrete Mathematics
Unit – II: Combinatorics, Number Theory

Tutorial Sheet - 3

S.No.	Questions	Answers
	Part - A	
1	A room has 10 doors. In how many ways can a man enter the room through one door and come out through a different door?	90
2	If $nP_4 = 20(nP_3)$, find n.	23
3	If $15C_r : 15C_{(r-1)} = 11:5$, find r.	5
4	Of any points chosen within an equilateral triangle whose sides are of length 1, show that two are within a distance of $\frac{1}{2}$ of each other.	
5	If there are 5 points inside a square of side length 2, prove that two of the points are within a distance of $\sqrt{2}$ of each other.	
	Part - B	
6	In how many ways can 6 students and 4 teachers be arranged in a row for a photograph if i. No two teachers are together ii. The teachers are all together?	(i) 604800 (ii) 120960
7	A candidate is required to answer 7 questions out of 12 questions which are divided into two groups, each containing 6 questions. He is not permitted to attempt more than 5 questions from either group. In how many ways can he choose the seven questions?	780
8	A round table conference is to be held between 10 delegates of 10 countries. In how many ways they can be seated if i. Two particular delegates are always together ii. Two particular delegates are on either side of the chair person.	(i) 80640 (ii) 10080
9	Find the number of integers between 1 and 250, both Inclusive, that are divisible by any of the integers 2, 3, 5, 7.	193
10	A cricket team plays at least one 20-20 match a day, but not more than 45 matches during a month with 30 days. Show that there must be a period of some consecutive days during which period the team plays exactly 14 matches.	