Government Engineering College, Modasa

M.E. Computer Engineering – Sem 1

Mathematical Foundation of Computer Science

Assignment – I

#	Description
1	How many different linear arrangements are there of the letters A, B, C, D, E, F for which (a) A and B are next to each other? (b) A is before B? (c) A is before B and B is before C? (d) A is before B and C is before D? (e) A and B are next to each other and C and D are also next to each other? (f) E is not last in line?
2	If 4 Americans, 3 French people, and 3 British people are to be seated in a row, how many seating arrangements are possible when people of the same nationality must sit next to each other?
3	A president, treasurer, and secretary, all different, are to be chosen from a club consisting of 10 people. How many different choices of officers are possible if (a) there are no restrictions? (b) A and B will not serve together? (c) C and D will serve together or not at all? (d) E must be an officer? (e) F will serve only if he is president?
4	A student is to answer 7 out of 10 questions in an examination. How many choices has she? How many if she must answer at least 3 of the first 5 questions?
5	How many different 7-place license plates are possible when 3 of the entries are letters and 4 are digits? Assume that repetition of letters and numbers is allowed and that there is no restriction on where the letters or numbers can be placed.
6	A committee of 6 people is to be chosen from a group consisting of 7 men and 8 women. If the committee must consist of at least 3 women and at least 2 men, how many different committees are possible?
7	Urn A contains 3 red and 3 black balls, whereas

	urn B contains 4 red and 6 black balls. If a ball is randomly selected from each urn, what is the probability that the balls will be the same color?
8	From a group of 3 freshmen, 4 sophomores, 4 juniors, and 3 seniors a committee of size 4 is randomly selected. Find the probability that the committee will consist of (a) 1 from each class; (b) 2 sophomores and 2 juniors; (c) only sophomores or juniors.
9	Five balls are randomly chosen, without replacement, from an urn that contains 5 red, 6 white, and 7 blue balls. Find the probability that at least one ball of each color is chosen.
10	Four red, 8 blue, and 5 green balls are randomly arranged in a line. (a) What is the probability that the first 5 balls are blue? (b) What is the probability that none of the first 5 balls are blue? (c) What is the probability that the final 3 balls are differently colored. (d) What is the probability that all the red balls are together?
11	Balls are randomly removed from an urn initially containing 20 red and 10 blue balls. What is the probability that all of the red balls are removed before all of the blue ones have been removed?
12	Write a short note on: Discrete Random Variable
13	Write a short note on: Continuous Random Variable
14	Explain Central Limit Theorem with example