


National University of Computer and Emerging Sciences, Lahore Campus				
	<b>Course:</b>	<b>Discrete Structures</b>	<b>Course Code:</b>	<b>CS-1005</b>
	<b>Program:</b>	<b>Computer Sciences</b>	<b>Semester:</b>	<b>Fall 23</b>
	<b>Date of submission</b>	<b>6 December 2023</b>	<b>Total Marks:</b>	<b>6</b>
			<b>Page(s):</b>	<b>1</b>
	<b>Section:</b>	<b>J</b>		
	<b>Evaluation</b>	<b>Assignment-3</b>		
<b>Instruction/Notes:</b>		Solve assignment on A4 page and submit on due date		

**Q. 1:** Two new drugs are to be tested using a group of 60 laboratory mice, each tagged with a number for identification purposes. Drug A is to be given to 22 mice, drug B is to be given to another 22 mice, and the remaining 16 mice are to be used as controls. How many ways can the assignment of treatments to mice be made? (A single assignment involves specifying the treatment for each mouse—whether drug A, drug B, or no drug.)

**Q. 2:** A computer programming team has 13 members.

- How many ways can a group of seven be chosen to work on a project?
- Suppose seven team members are women and six are men.
  - How many groups of seven can be chosen that contain four women and three men?
  - How many groups of seven can be chosen that contain at least one man?
  - How many groups of seven can be chosen that contain at most three women?
- Suppose two team members refuse to work together on projects. How many groups of seven can be chosen to work on a project?
- Suppose two team members insist on either working together or not at all on projects. How many groups of seven can be chosen to work on a project?

**Q. 3:** A student council consists of 15 students.

- In how many ways can a committee of six be selected from the membership of the council?
- Two council members have the same major and are not permitted to serve together on a committee. How many ways can a committee of six be selected from the membership of the council?
- Two council members always insist on serving on committees together. If they can't serve together, they won't serve at all. How many ways can a committee of six be selected from the council membership?
- Suppose the council contains eight men and seven women.
  - How many committees of six contain three men and three women?
  - How many committees of six contain at least one woman?
- Suppose the council consists of three freshmen, four sophomores, three juniors, and five seniors. How many committees of eight contain two representatives from each class?

