

QUESTION 2

[10 MARKS]

- a) From a group of 8 men and 6 women, five persons are to be selected to form a committee so that at least 3 women are on the committee. In how many ways can it be done?

$$\begin{aligned} 2) a) \quad & 3 \text{ women} \times 2 \text{ men} = {}^6C_3 \times {}^8C_2 = 560 \\ & 4 \text{ women} \times 1 \text{ man} = {}^6C_4 \times {}^8C_1 = 120 \\ & 5 \text{ women} \times 0 \text{ men} = {}^6C_5 \times {}^8C_0 = 6 \end{aligned}$$

$$560 + 120 + 6 = 686$$

- b) The SE Students in MJIT need to form a group for Discrete Structure Assignments. The group must contain four students. Given that the total number of students is 20, half of it is girls. How many different ways can a group be selected if at least one boy must be there in the team? (5 marks)

2) b) If no boys are chosen:

$$T_1 = {}^{10}C_0 \times {}^{10}C_4 = 210$$

Total number of ways to form a group of 4 from 20 students:

$$T_2 = {}^{20}C_4 = 4845$$

At least one boy must be in the team:

$$T_2 - T_1 = 4845 - 210 = 4635$$

