(c) A software QA team is testing a new feature in an application. Historically, 7.8% of test cases fail due to bugs. The team runs 18 independent test cases in the next testing cycle.

i. Calculate the probability that atmost 8 test cases fail. [2 marks]

Solution:

$$n = 18, \quad p = 0.078, \quad q = 0.922$$

$$P(x \leq 8) = \sum_{0}^{8} \binom{18}{x} 0.078^{x} 0.922^{18-x} = 0.99999$$

ii. Find the expected number of fail test cases and standard deviation of pass test cases

Solution:

$$Let\ Y = pass\ test\ cases$$

$$E(X) = np = 18 * 0.078 = 1.404$$

$$\sigma_Y = \sqrt{npq} = \sqrt{18 * 0.922 * 0.078} = 1.137755$$