32+30+30

COMSATS University Islamabad
Department of Computer Sciences
Mid Term Examination Spring 2026
Subject: Statistics and Probability Theory

Total Marks: 25
Semester: 4th (A & B)
Instructor : Lubna Waqar

Program: BSE
Time Allowed: 1.5 hrs.

Note: Attempt all questions.All questions carry equal marks.

Q#1. Human Power, the temporary employment agency, has tested many people's data entry skills. Infotech needs a data entry person, and the person needs to be not only quick but also consist tent. Human Power pulls the speed records for 4 employees with the data given below in terms of number of correct entries per minute. Which employee is best for Infotech based on relative dispersion?

John	63	66	68	62	69	
Jeff	68	67	66	67	69	
Mary	62	79	75	59	72	84

Q#2. One bag contains 4 white balls and 3 black balls, and a second bag contains 3 white balls and 5 black balls. One ball is drawn from the first bag and placed unseen in the second bag. What is the probability that a ball now drawn from the second bag is black?

Q#3. In a certain assembly plant, three machines, B1, B2, and B3, make 30%, 45%, and 25%, respectively, of the products. It is known from past experience that 2%, 3%, and 2% of the products made by each machine, respectively, are defective. Now, suppose that a finished product is randomly selected.

a) What is the probability that it is defective?
b) if a product was chosen randomly and found to be defective, what is the probability that it was made by machine B3?

Q#4. The HAL Corporation wishes to improve the resistance of its personal computer to disk-drive and keyboard failures. At present, the design of the computer is such that disk-drive failures occur only one-third as often as keyboard failures. The probability of simultaneous disk-drive and keyboard failures is 0.05.

(a) If the computer is 80 percent resistant to disk-drive and/or keyboard failure, how low must the disk-drive failure probability be?

(b) If the keyboard is improved so that it fails only twice as often as the disk-drive (and the simultaneous failure probability is still 0.05), will the disk-drive failure probability from part (a) yield a resistance to disk-drive and/or keyboard failure higher or lower than 90 percent?