CCE Proficience – 2018

Basics of Data Analytics – Fundamentals

Study Assignmet 1 (No need to submit)

Problem 1:
Consider a pool of six I/O buffers. Assume that any buffer is just as likely to be available or occupied as any other. Compute the probabilities associated with the following events:
A = At least two but no more than five buffers occupied.
B = At least three but no more than five buffers occupied.
C = All buffers available or an even number of buffers occupied.
D = At least one of the events A, B, and C occurs.

Problem 2:
How many even two-digit numbers can be constructed out of the digits 3, 4, 5, 6 and 7?

(a) Assume you may use the same digit again.
(b) Assume you may not use a digit more than once.

Problem 3:
A box with fifteen integrated circuit chips contains five defectives. If a random sample of three chips is drawn, what is the probability that all three are defective?

Problem 4:
In a party of five persons, compute the probability that at least two have the same birthday (month and day), assuming a 365-day year.

Problem 5:
A certain firm has plants A, B, and C producing, respectively, 35%, 15% and 50%, of total output. The probabilities of a non-defective product are, respectively, 0.75, 0.95, and 0.85. A customer receives a defective product. What is the probability that it came from plant C?

Problem6: Prove the following for a continuous distribution function.

$$\int_{-\infty}^{\infty} e \frac{-(x-u)^2}{2\sigma^2} dx = \sqrt{2\pi} \cdot \sigma$$