Assignment-2 Rubric BCS-4E (15)

Q1:

1- (a) X: no of High Performance SSD series

$x = 0, 1, 2, 3$.

Summary:
Total = 12 Series
High Performance SSD = 4
Standard HDD = 8
Selected = 3

Probability Function: (1)

$$P(X=x) = \frac{\binom{4}{x}\binom{8}{3-x}}{\binom{12}{3}} \quad x = 0,1,2,3.$$

$P(X=0) = 0.2545$

$P(X=1) = 0.5091$

$P(X=2) = 0.2182$

$P(X=3) = 0.0182$

X	P(X)	F(X)
0	0.2545	0.2545
1	0.5091	0.7636
2	0.2182	0.9818
3	0.0182	1

(one each) (4) (one each)

2- CDF = $F(X) = P(X \le x)$

$$F(X) = \begin{cases} 0 & x < 0 \\ 0.2545 & 0 \le x < 1 \\ 0.7636 & 1 \le x < 2 \\ 0.9818 & 2 \le x < 3 \\ 1 & x \ge 3 \end{cases}$$

Q2:

1- License number is as follows. (6)

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as there are 9 Possibilities for Position 5 & 8 Possibilities are for last digit so, $9 \times 8 = 72$ (2)

2-a: let 'A' for the student answering all 5 Problems (2)

$$P(A) = \frac{n(A)}{n(S)} = \frac{\binom{7}{5}\binom{3}{0}}{\binom{10}{5}} = \frac{21}{252} = 0.083.$$ including working

2-b: let 'B' for answering at least four Problems. (2)

$$P(B) = \frac{n(B)}{n(S)} = \left[\binom{7}{4}\binom{3}{1} + \binom{7}{5}\binom{3}{0}\right] / \binom{10}{5} = \frac{126}{252} = 0.5$$