(1) QP : 59172

* FYBSc Paper 2 Sem I OCT 2018 Set A Regular

Q.1) a) 1) F: $0 \leq$ Probability ≤ 1

2) F: $P(B) \neq 1 - P(A)$

3) T

4) F $E[E(x)] = E(x)$

5) F ~~only one variable~~, for Poisson.

1) b) Definition = 01

Example = 01

for each question.

2) i) I) Statement + Proof = 01 + 04 = 05

3 events = 02

II] i)
ii)
iii)
} $\frac{1}{2}$ for 2 events + $\frac{1}{2}$ for 3 events = 03.

2) I) 2 marks each = 06

II) 4 marks.

3) I) 03

II) 02

III) (i) $n = \frac{10!}{3! * 3! * 1! * 2! * 1!} = 50400 \Rightarrow (01)$

(i) $m = \frac{9!}{3!\ 3!\ 2!\ 1!} = 5040 \Rightarrow (02)$

(ii) $m = \frac{7!}{3!\ 1!\ 2!\ 1!} = 420 \Rightarrow (02)$

Q.2] 4] I] State + Proof = 02 + 04 = 06

II] P(Cancellation) = 0.023

P(Train / cancellation) = 0.652)

Q.3] 1] I] each def^n 01 ⇒ (05)

II] i] K = 1/36 (2 1/2)

ii] K = 1/36 (2 1/2)

2] State + Proof + Extension = 01 + 03 + 01 = (05)

II] X & Y are independent = (05)

3] I] Def = 01 2 examples = 02

II] Def = 01

III] Def = 01 5 properties = 05

4] PMF :

X	0	1	2	3
P(X)	1/8	3/8	3/8	1/8

(04)

CDF $F(x) = 0$ $x < 0$

$= \frac{1}{8}$ $0 \le x < 1$

$= \frac{4}{8}$ $1 \le x < 2$

$= \frac{7}{8}$ $2 \le x < 3$

$= 1$ $x \ge 3$

⇒ (04)

Graph = (02)

(2) (3)

Q.4) 1

1) I) Def + Exs = 01 + 02 = (03)

II) Def + Mean + Variance = 01 + 03 + 03 = (07)

2) Def + Exs + Mean + Variance = 01 + 02 + 03 + 04 = (10)

3) Def^{2s} = 01 + 02 = (03)

Difference = (01)

Mean = (06)

4) Def + Mean + Variance = 02 + 03 + 05 = (10)

Q. 5) 1) each 01 mark.

2) State + Proof = 01 + 04

3) $E(X+5) = 0$, $E(2X+5) = 15$, $E(X-Y) = 10$,

$E(X+Y-10) = -10$,

4) 05

5) 05

6) 05

7) $p = 0.02$, $n = 200$ (large)

$\lambda = np = 2$

$X \sim Poi(\lambda = 2)$

$P(X \geq 3) = 1 - P(X < 3)$

$= 1 - [P(X=0) + P(X=1) + P(X=2)]$

$= 1 - e^{-2}[1 + 2 + 2]$

$= 1 - 5e^{-2}$