

- Use of Scientific Non-Programmable calculator is allowed

**Q.1) a) State true or false for each of the following statements. Justify your answer. (10)**

- 1) False  $P(a < X < b) = P(a \leq X \leq b)$  (02)
- 2) False (02)
- 3) False : Continuous > Rectangular (02)
- 4) True (02)
- 5) False : rejection region (02)

**Q.1) b) Define the following with the help of example. (10)**

- 1) (02)
- 2) (02)
- 3) (02)
- 4) (02)
- 5) (02)

**Q.2) Attempt any TWO sub-questions.**

- 1) Each 02 marks (10)
- 2) Each 02 marks (10)
- 3) (i)  $C = 0.25 > 02$ marks (ii)  $E(X) = 4/3 > 02$  marks (10)  
(iii)  $V(X) = 64/45 > 04$  marks (iv)  $P(X=2) = 0 > 02$ marks
- 4) i. Define PDF > 02 marks properties > 02 marks (10)  
ii. Define CDF > 02 marks properties > 04 marks

**Q.3) Attempt any TWO sub-questions.**

- 1) Define Continuous Uniform Distribution > 02 Mean > 02 Variance > 03 Median > 03 (10)
- 2) i. Define Normal Distribution > 02. State its properties > 05 (10)  
ii)  $P = X+Y-Z \sim N(0,38)$       b)  $Q = X-Y \sim N(-10, 13)$       c)  $R = X-Y+3 \sim N(-7,13)$   
Each 01 mark
- 3) Define Exponential Distribution > 02 mean > 03 variance > 05 (10)
- 4) i. a)  $P(\text{exceed 30 hours}) = 0.4493$       b)  $P(\text{less than 35 hours}) = 0.6988$ . (10)  
ii. 225      **Marks?**

**Q.4) Attempt any TWO sub-questions.**

- 1) (10)
- 2) Each 01 mark (10)
- 3) (10)
- 4) Each 05 marks (10)

**Q.5) Attempt any four sub-questions.**

**(20)**

- 1) i) No >02                      ii) Yes > 03 (05)
- 2)    i.     $P(X < 0.25) = F(0.25) = 0.3672$  (05)  
      ii.     $f(x) = \frac{3}{2}(1-x^2)$
- 3) (05)
- 4) (05)
- 5) (05)
- 6) (05)
- 7) (05)