**Question 1**

𝑓𝑋𝑌(𝑥, 𝑦) = { e−𝑥−𝑦 0 < 𝑥 < ∞, 0 < 𝑦 < ∞ 0 𝑒𝑙𝑠𝑒𝑤ℎ𝑒𝑟e

**Solution**:

=

X should be less than y

=

=

=

=

=

After Substituting the limits

=[-[0-]+[0-1]]

=[]

=

P(x<y) =