Probability and Statistics

Quiz-II 6 APRIL, 2018

Time: 30 Minutes Maximum Marks: 10

Q.1 Given that $E(X) = 5$, $E(X^2) = 27$, $E(Y) = 7$, $E(Y^2) = 51$ and var$(X + Y) = 8$, find cov$(X + Y, X + 2Y)$. **[5 marks]**

Q.2 The joint density function of X and Y is given by

$$f(x, y) = \begin{cases} \dfrac{e^{-\frac{x}{y}} e^{-y}}{y}, & x > 0,\ y > 0, \\ 0, & \text{otherwise.} \end{cases}$$

Compute conditional density function of X given $Y = y$, i.e., $f_{X|Y}(x|y)$ for all $y \in \mathbb{R}$ and hence find $P(X > 1|Y = y)$ for all $y \in \mathbb{R}$. **[5 marks]**