

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST - 1 EXAMINATION (Aug-Sept 2025)

B.Tech. - III Semester (CSE/IT)

COURSE CODE (CREDITS): 18B11MA313 (3)

MAX. MARKS: 15

COURSE NAME: PROBABILITY & STATISTICS

COURSE INSTRUCTORS: RKB*

MAX. TIME: 1 Hour

Note: All questions are compulsory. The candidate is allowed to make suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	A box contains 6 red, 4 white and 5 black balls. A person draws 4 balls from the box at random. Find the probability that among the balls drawn there is at least one ball of each colour.	CO-1	3
Q2	The probability that Ravi does his homework is $\frac{1}{10}$ if he goes out with his friends and $\frac{3}{5}$ if he does not go out with his friends. The probability that Ravi goes out with his friends is $\frac{3}{4}$. What is the probability that Ravi does his homework?	CO-1	3
Q3	In a bolt factory, machines A, B and C manufacture respectively 25%, 35% and 40% of the total. Of their output 5%, 4%, 2% are defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machines A, B and C ?	CO-2	3
Q4	Consider the probability distribution of X : $P(X = x) = \begin{cases} \frac{x}{15} & , \quad x = 1, 2, 3, 4, 5 \\ 0 & , \quad \text{otherwise} \end{cases}$ Find (i) $P(X = 1 \text{ or } 2)$ (ii) $P(\frac{1}{2} < X < \frac{5}{2} \mid X > 1)$	CO-2	3
Q5	A random variable X has the probability density function: $f(x) = \begin{cases} 2x & , \quad 0 \leq x < 1 \\ 0 & , \quad \text{otherwise} \end{cases}$ Find (i) $P(\frac{1}{4} < X < \frac{1}{2})$ (ii) $P(X > \frac{3}{4} \mid X > \frac{1}{2})$.	CO-2	3
