JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST–1 EXAMINATIONS–2024

B.Tech.– VIII Semester (All)

COURSE CODE (CREDITS): 21B1WCE831 (3) MAX. MARKS: 15

COURSE NAME: Disaster Risk Analysis and Management

COURSE INSTRUCTOR: Dr. Sugandha Singh MAX. TIME: 1 Hour

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

1. Answer the following questions about uncertainties in detail.
   a. How are *'Uncertainties in Engineering'* defined? **[2]**
   b. Discuss the difference between different types of uncertainties with real life examples. **[3]**
2. For any two events, E_1 and E_2, prove the following relationship: **[4]**

$$P(E_2|E_1) + P(\bar{E}_2|E_1) = 1$$

3. A team of two engineers, A and B, was assigned to check a set of computations. The two worked simultaneously but separately and independently. The probability of engineer A spotting a given error is 0.8, whereas that for B is 0.9.
   a. Suppose there is only one error in the computation. What is the probability that this error will be spotted by this team? **[2]**
   b. If the error in part (a) was identified, what is the probability that it was discovered by A alone? **[2]**
   c. Suppose there is an alternative team consisting of three engineers, C1, C2, and C3, each of whom works separately and independently and has a probability of 0.75 of spotting a given error. Would this team of three engineers be selected instead, if the objective is to maximize the chance of spotting the error? Please justify. **[2]**