

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- FEB-2023

B.Tech-VIII Semester (ECE)

COURSE CODE (CREDITS): 19B1WEC832 (3)

MAX. MARKS: 15

COURSE NAME: CAD Algorithms for Synthesis of Digital Systems

COURSE INSTRUCTOR: Dr. Pardeep Garg

MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets. CO indicates Course Outcomes.

Q1. Discuss the objectives, features, and benefits of CAD tools. CADs have their importance in many fields; justify this statement with few examples. Discuss the importance of CAD tools in VLSI field in detail. [CO-1, 1+1+1=3 marks]

Q2. There are 35 persons in a meeting. All of these shake hands with each other in the beginning of meeting. Considering this example in the context of graph theory (vertices, edges, and degree), explain in detail by describing each step and the formula used; how many hand-shakes took place? [CO-1, 2 marks]

Q3(i). The number of vertices of odd degree in a graph is always even, prove this statement.

[CO-1, 2 marks]

Q3(ii). Among a group of 9 persons, is it possible for everyone to be friends with exactly 2 of the persons in the group? What about 3 of the persons in the group, justify? [CO-1, 1 mark]

Q4. Draw the binary decision diagram (BDD) for the following function by following the variable expansion sequence as $x_1 > x_2 > x_3$.

$$F(x_1, x_2, x_3) = x_1 \cdot x_2 + \overline{x_1} \cdot x_3 + x_1 \cdot \overline{x_2} \cdot x_3$$

[CO-4, 2 marks]

Q5. The graph shown in Figure 1 represents friendships between a group of students (each vertex is a student and each edge is a friendship). Is it possible for the students to sit around a round table in such a way that every student sits between two friends? Which type of graph/circuit will solve this problem, draw your output? [CO-1, 2 marks]

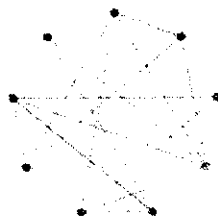


Figure 1