

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

M.Tech-I Semester (ECE)

COURSE CODE (CREDITS): 21M1WEC131 (3)

MAX. MARKS: 15

COURSE NAME: Wireless Technologies for IoT

COURSE INSTRUCTORS: Dr. Shweta Pandit

MAX. TIME: 1 Hour

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

- Q1. a) Categorize various IoT Wireless Communication technologies. [2][CO-3]
b) In the layered IoT network architecture, describe various components existing at different layers. [2][CO-2]
- Q2 a) Provide the description of the major technological changes existing in the 4G standard in comparison to the earlier generation standards. Compare by considering at least eight parameters. [3][CO-1]
b) Mention the advantages of using ISM and U-NII bands by the IoT network. Also specify the operating frequency value for ISM and U-NII bands. [1][CO-1][CO-2]
c) Bluetooth uses which one of the spread spectrum technology? Provide the specification of that particular spread spectrum technology which is employed in Bluetooth. [1][CO-1]
- Q3. a) A cellular IoT system is using a 50MHz of bandwidth with FDD scheme and uses two 200KHz simplex channels to provide voice and control channels for two-way communication. Compute a) the total number of channels available in the system per cluster if cluster size is 7. b) total number of channels per cell. c) If a cluster is repeated ten times, find the capacity of the system. [3][CO-3]
b) In the FDD/TDMA based system, a call has been initiated by the mobile user to another mobile user. A total of 1MHz bandwidth is allocated to control channels in a total 33MHz bandwidth system using 12 cell reuse factor and 50KHz duplex channel. What is the sequence of call flow from one mobile user to another user over control and voice channels? Find the number of forward and reverse control and voice channels individually over which call flow will happen. [3] [CO-1]