JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

M.Tech-I Semester (ECE-IoT)

COURSE CODE (CREDITS): 21M1WEC133 (3) MAX. MARKS: 35

COURSE NAME: INDUSTRIAL AUTOMATION AND IIOT

COURSE INSTRUCTORS: RAJIV KUMAR MAX. TIME: 2 Hours

Note: (a)All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for

solving problems

Q-1: Answer each of the following parts:
   a) Write onDevice-to-Device communication and its objectives? [2,CO-5]
   b) What are the applications of CC-link for PLC and HMI [2,CO-5]

Q-2: a) What are the different requirements of industrial communication? [2,CO-5]
   c) Explain gas sensor systems. What are the characteristics of sensor? [2,CO-6]
   d) What are various challenges for industrial processes? Briefly explain the design
      philosophy in Industry 4.0 using IIoT. [2,CO-6]

Q-3: a) What are the building blocks of business model? Explain each one. [2,CO-6]
   b) Explain with the help of an example of cloud base business model. [2,CO-6]

Q-4 a) What is lean production system? Explain with example. [2,CO-6]
   b) With reference to manufacturing give details of main characteristics of smart factory.
      [2,CO-6]

Q-5. a)Explain the connectivity in the growth of business (in context of Industry 4.0). [2,CO-4]
   b) Explain the use of following protocols for IoT: [3,CO-2]
      IEEE 802.15.4, ZigBee, 6LoWPAN,
      Wireless HART, Z-Wave, ISA 100,
      Bluetooth, NFC, and RFID.

Q-6. a) Classify the sensors. What are static and dynamic characteristics of sensors? What are
      the significances of these characteristics? [2,CO-2]
   b) Explain with giving one example of each: microcontroller, transducer and actuator
      [2,CO-2]

Q-7 Write note on the following: [2X4=8,CO-3,4]
   i)   Implementation of PLC using IoT
   ii)   Applications of SCADA
   iii)   Industrial IoT Application in Healthcare and Power Plants
   iv)   Advantages and limitations of Automation