National University of Computer and Emerging Sciences, Lahore Campus

Introduction to Internet of Things (Code: IO4041)

Quiz 1 [BCS-2A] Spring 2022

Date: March 17, 2022   **Weighatge: 2.5%**   **Marks**: 15   **Duration**: 25 Minutes

Name: ----------------------   Roll # -------------------   Section: ----------------

Question 1: Multiple choice questions / fill in the blanks / True or False: [5 Marks]

    i.   A huge number of devices connected to the Internet of Things have to communicate automatically, not via humans. What is this alternate name for this paradigm?
               A. Machine 2 Machine   B. Bot 2 Bot   C. Skynet   D. Intercloud

    ii.   What is the prevalent operating system being used on Raspberry Pi?
               A. Windows IoT   B. Raspbian   C. Chromium   D. Etcher

    iii.   In publish subscribe model, brokers accept data from publishers and send it to the appropriate subscribers.

    iv.   With respect to Internet protocol stack (TCP/IP), ---------- layer is responsible for routing of datagrams source node destination node.
               A. application   B. data link   C. network   D. transport

    v.   In MQTT, UDP is used instead of TCP.
               A. True   B. False

Question 2: Provide the precise answers to the following questions: [3+2+5 = **10 Marks**]

   I.   Give two examples of each of the following: (a) sensors, (b) actuators and (c)controller
  II.   Define ubiquitous connectivity.
 III.   Suppose packet length (i.e., remaining length) field of MQTT packet indicates that there are 20000 bytes in variable header and payload part. You are required to answer the following keeping in view the encoding algorithm. X represents the length i.e., X = 20000.
         a) How many bytes are required for packet length field including extension bytes?
         b) For each byte of the packet length, write down the encoded binary data.

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Note: Start writing your answer to Question 2 from here onward. You can make use of back side of this sheet of required.

Question 2: Answers:

   I.   (a) temperature sensor, smoke sensor, **(b)** water control motor, washing machines, **(c)** Arduino, Raspberry PI
  II.   It means connection between/among any THINGs at any PLACE and at any TIME
 III.   (a) 3 bytes are required, (b) First byte: 1010000, second byte: 10011100, and third byte: 000000001