Total No. of printed pages = 3

19/6th Sem/DECE 613 A



2022

# INTERNET OF THINGS

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What is RFID ? With an example explain a system employing RFID. 5

   (b) Give two examples of M2M systems. 5

   (c) Draw the block diagram of a microcontroller used by an IoT device. 5

   (d) What does the platform integration tool mean ? Write important features of things-speak. 5

2. (a) How IoT can be helpful in developing an early alarm system for flood ? How do we measure rain and how IoT can be used to efficiently measure the rain in different areas of country ? 5

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(b) Explain the functions of capacitive sensor. 5

(c) Using a block diagram explain the components of electronic thermometer. 5

(d) Write a table for IEEE defined Mac layer. 5

3. (a) Identify the wired/wireless technologies used by IoT devices : 1×10=10

(i) Bluetooth

(ii) WiFi

(iii) WiMax

(iv) Visible light communication

(v) Optical fibre communication

(vi) ZigBee

(vii) Ethernet

(viii) RFID

(ix) GSM

(x) 6LowPAN.

(b) Which wireless technologies are used for low power *IoT devices ?* 5

(c) What is the role of WiMax in the smart city ? 5

5. (a) Draw and explain each layer of OSI model. 5

(b) Convert the following in Mbps : 5

(i) 2048 bps (ii) 1 Tbps

(iii) 5000 Kbps (d) 30 Gbps

(c) What is industrial IoT ? How is IIoT technology used in optimizing the bicycle manufacturing process ? 10

6. (a) Write a short note on ISM band. 5

(b) Write a short note on near field communication and Zigbee. 5

(c) What is the role of modulation technique used by IoT devices ? Explain the following modulation technique in detail : 10

(i) ASK

(ii) FSK

(iii) QPSK.