Time: 2½ hrs.   **Marks:75**

Note:
1. All questions are compulsory with internal choice.
2. Draw neat diagrams wherever necessary.
3. Figures to the right indicate full marks.

Q.1   **Answer the following (any four)**   **(20)**
    (a) Define IoT. Explain various characteristics of IoT.
    (b) Explain the architecture of IoT technology.
    (c) Explain various identifiers of IoT.
    (d) Explain the structure of SoC with neat labelled diagram.
    (e) Write a note on FPGA and GPU.
    (f) Differentiate between IoT and M2M.

Q.2   **Answer the following (any four)**   **(20)**
    (a) List and explain different types of actuators.
    (b) Write a note on UART interfacing platform.
    (c) Explain the use of SPI interfacing platform.
    (d) Explain the features of Raspberry Pi GPIO.
    (e) Write a note of MQTT protocol.
    (f) Write a note of UPnP protocol.

Q.3   **Answer the following (any four)**   **(20)**
    (a) Explain the architecture of WSN.
    (b) What is cloud computing. Explain the need of cloud technology in IoT.
    (c) Describe the process of sending and receiving data between web server and IoT device.
    (d) Explain the IoT model used in health care.
    (e) Write a note on Node RED.
    (f) What is Edge computing? Explain any two use cases of edge computing.

Q.4   **Answer the following (any three)**   **(15)**
    (a) Explain the architecture of atmega328 microcontroller.
    (b) Explain the architecture of SoC-ARM.
    (c) Describe various privacy and security issues in IoT.
    (d) Explain 8x8 LED matrix and its interfacing with Arduino.
    (e) Explain the IoT model used in transportation.
    (f) Differentiate between Edge computing and Fog computing.

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