SYCS/SEM IV/REG/Internet of Things

**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) Which IoT protocol are used at physical design of the IoT architecture?
(c) What are the constraints in representational state transfer (REST) based communication APIs?
(d) Differentiate between IoT and Machine to Machine.
(e) Define system on chip (SoC) with its advantages and disadvantages.
(f) What is graphics processing unit?

**Q.2 Answer the following (any four)** **(20)**

(a) Explain push-pull communication model.
(b) What is universal plug and play (UPnP)? explain its advantages.
(c) List & explain advantages of message queuing telemetry transport. (MQTT)?
(d) Explain constrained application protocol (CoAP) message format with neat and labelled diagram.
(e) Differentiate between sensors and actuators.
(f) What are the different types of wireless sensor networks (WSNs)?

**Q.3 Answer the following (any four)** **(20)**

(a) Explain HTTP protocol in IOT.
(b) Differentiate between analog sensors and digital sensors.
(c) Explain architecture of wireless sensor networks (WSNs)?
(d) Define edge computing. What is the purpose of edge computing?
(e) Write a short note for following sensors:
   I. Light Sensor
   II. Gas Sensor
   III. Ultrasonic sensor
(f) What is machine to machine Communication model?

**Q.4 Answer the following (any five)** **(15)**

(a) How can a camera be interfaced with IoT devices?
(b) Define web server with its key features.
(c) What are the various security issues in IoT ?
(d) Write a short note on node red.
(e) Differentiate between edge computing and fog computing.
(f) Explain the following terms:
   I. Arduino
   II. NodeMCU

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