

(2½ hours)

[Total Marks: 75]

- N. B.: (1) **All** questions are **compulsory**.
- (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
- (3) Answers to the **same question** must be **written together**.
- (4) Numbers to the **right** indicate **marks**.
- (5) Draw **neat labeled diagrams** wherever **necessary**.
- (6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt any three of the following:

15

- Define and explain the Internet of Things and Ubiquitous Computing.
- List and explain the roles of people making Internet of Things.
- What is Calm and ambient Technology? Explain with Example.
- “Be conservative in what you do, be liberal in what you accept from others”. Discuss.
- Write short note on HTTP and HTTPS.
- What is MAC (Media Access Control) address? Explain.

2. Attempt any three of the following:

15

- What is sketching? Explain its role in prototyping.
- Discuss the tradeoffs between cost versus ease of prototyping.
- What are advantages and disadvantages of open source?
- Explain microcontrollers and system-on-chips with respect to embedded computing.
- With a help of an example explain the process of Scaling up the electronics.
- Write short note on sensors and actuators.

3. Attempt any three of the following:

15

- What are non-digital methods and materials commonly used in prototyping?
- What is laser cutter? Explain the main features to consider while choosing a laser cutter.
- What is CNC milling? What are different attributes of CNC mills? Explain.
- Discussed different standards that must be considered while implementing APIs.
- Write short note on Message Queuing telemetry transport (MQTT) and Constrained Application Protocol (CoAP).
- Why polling technology is used? Explain working of polling with example.

4. Attempt **any three** of the following:

15

- a. What are the concerns regarding performance and battery life while writing code for embedded systems?
- b. Explain different types of memory.
- c. What are libraries? Explain with example.
- d. Discuss the business model canvas for Internet of Things.
- e. Explain government funding for IoT projects.
- f. Write a short note on venture capital.

5. Attempt **any three** of the following:

15

- a. What is the importance of Certification for IoT devices? Why it is required?
- b. Explain the process of designing the kits in details.
- c. What are the different software options for designing PCB? Explain
- d. Discuss the advantage and disadvantages of technology.
- e. Explain privacy with respect to Internet of Things.
- f. Discuss the main goals of Open Internet of Things definition.
