

Total No. of Questions : 10]

SEAT No. :

**P3998**

[Total No. of Pages : 3

**[5353]-588**

**T.E. (Computer Engineering) (Semester - II)**  
**EMBEDDED SYSTEM & INTERNET OF THINGS**  
**(2015 Pattern)**

*Time : 2.30 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Answer any five questions Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) Assume Suitable data wherever necessary.*
- 3) Figures to the right indicate full marks.*
- 4) Draw neat & labelled diagram wherever necessary.*

**Q1)** a) What are the different characteristics that an embedded system should possess? **[5]**

b) Compare REST-based communication and WebSocket communication API **[5]**

OR

**Q2)** a) Explain the steps involved in the IoT system design methodology. **[4]**

b) Why do IoT systems have to be self-adapting and self-configuring? **[2]**

c) Explain WSN (the internet of transducers) pillar of IoT. **[4]**

**Q3)** a) What is SCADA ? What are the different blocks of SCADA **[5]**

b) Explain Functional view specification step of IoT system design methodology, consider smart IoT-based home automation system as an example. **[5]**

OR

**Q4)** a) With the help of appropriate diagram explain WebSocket-based communication APIs **[3]**

b) Draw and explain block diagram of an IoT device. **[4]**

c) What is Raspberry Pi? Explain 4 features of it **[3]**

**P.T.O**

**Q5) a)** What are the different topology of 802.15.4? Explain with suitable diagram. [6]

b) What is BACnet? Explain the different layers function [6]

c) What are the challenges for securing IoT [4]

OR

**Q6) a)** Explain the Zigbee architecture with suitable diagram [6]

b) What are the issues with IoT Standardization, [4]

c) What is KNX? Explain KNX-TP features, its Telegram [6]

**Q7) a)** What is Web of Things (WOT) ? What are the two pillars of the web? Explain in brief. [6]

b) Explain the key elements of the ETSI M2M architecture. [6]

c) Explain Cloud of Things Architecture. [5]

OR

**Q8) a)** Explain Cloud Middleware Architecture. [6]

b) Explain RFID middleware standards? [6]

c) Explain unified multitier WOT Architecture in details. [5]

**Q9) a)** Design Weather Monitoring system, what are the different components required? draw deployment design for this system [6]

b) Write short note on [6]

i) Amazon Auto Scaling

ii) Xively Cloud for IoT

c) Explain python web application framework - Django. [5]

OR

- Q10)** a) Explain WAMP and its key concepts with diagram. [5]
- b) Explain in brief Model, Template and View in Django architecture [6]
- c) Design Air Pollution Monitoring (APM) based on followings [6]
- i) Define process specification for APM IoT system
  - ii) Domain model of APM IoT system
  - iii) Information model of APM IoT system
  - iv) Controller service of APM IoT system

