**Total No. of Questions : 8]**

**SEAT No. :** [ ]

**P7767**

**[Total No. of Pages : 2**

# [6180]-314

## T.E. (Honors) (Computer Engg.)

## EMBEDDED SYSTEMS AND INTERNET OF THINGS

## (2019 Pattern) (Semester-I) (310601)

***Time : 2½ Hours]*** ***[Max. Marks : 70***

***Instructions to the candidates:***

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn whenever necessary***
4) ***Assume Suitable data if necessary.***
5) ***Use of Non-Programmable scientific calculators is allowed.***

***Q1)*** a) Draw and describe the components of Arduino. **[6]**

b) What are the analog and digital types of sensors? Discuss and provide suitable examples. **[6]**

c) What is the need of interfacing of sensors with development boards? How is it done? **[5]**

OR

***Q2)*** a) Differentiate between active and passive sensor. **[6]**

b) Draw and describe the components of Raspberry Pi development board. **[6]**

c) Explain the working of sensors and different types of sensors. **[5]**

**Q3)** a) What is the need of Integrated Development Platform for application development? Explain with suitable example. **[6]**

b) Describe any one open-source IDE for ES application development. **[6]**

c) What are the testing and deployment requirements of embedded systems applications? **[5]**

OR

***Q4)*** a) List the open source IDE for embedded system application development. Explain any one in detail. **[5]**

b) Explain Design, Components and Coding requirements of embedded systems application? **[6]**

c) List the phases of SDLC. Explain SDLC requirements in detail. **[6]**

***P.T.O.***

***Q5)*** a) With the help of neat diagram, explain technical building blocks of IoT. **[6]**

b) Write a brief note on communication models of IoT and Communication APIs. **[6]**

c) Explain IoT functional blocks in detail. **[6]**

OR

***Q6)*** a) Define Internet of Things (IoT). Enlist and explain its characteristics. **[6]**

b) Draw and distinguish between physical design and logical design of IoT. **[6]**

c) Enlist and explain issues and challenges of IoT. **[6]**

***Q7)*** a) Explain the usability of MQTT protocol for IoT applications. Comment on the QoS supported in MQTT. **[6]**

b) Write a short note on AMQP protocol for IoT. **[6]**

c) Write a short note on 'Zigbee" protocol. **[6]**

OR

***Q8)*** a) What is CoAP? How it is suitable for IoT applications? Discuss in detail. **[6]**

b) Define Radio-Frequency Identification. Explain the role of Radio-Frequency Identification in Internet of Things. **[6]**

c) List different IoT enabling technologies which play a key-role and explain any one of them. **[6]**

❖ ❖ ❖