Seat No: _____   Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2021 - 22 Examination

Semester: 8   Date: 28/03/2022
Subject Code: 03105452   Time: 10:30 am-1:00pm
Subject Name: Cyber Physical Systems   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five in case **(15)** of MCQ) (All are compulsory) (Each of one mark)

1. DHT11 is _____ sensor.

2. Which of the following is a component of a typical CPS?
    (a) Sensor
    (b) Editor
    (c) Communication link
    (d) Software developer

3. Does Raspberry Pi need external hardware?
    • True
    • False

4. Protocols in the ____layer accept data from the Network layer and manage end-to-end delivery of data.

5. HTTP protocol has pipelining
    • True
    • False

6. Which is not an issue to be concerned with at the transport layer?
    (a) in-sequence delivery
    (b) reliability
    (c) framing
    (d) flow control

7. _____ enables seamless integration of LoWPAN devices with internet leveraging.

8. _____ Protocol contains the features like URI and content type support

9. Actuator is the component which is responsible for controlling a mechanism of a system.
    • True
    • False

10. Routing is done with….
    (a) MAC addresses
    (b) IP addresses
    (c) wireless addresses
    (d) physical addresses

11. What is the full form of XMPP?

12. How many Input/output pins on board Raspberry Pi3 has?

13. The ZigBee protocol is very secure as it uses variety of security mechanisms.
- True
- False

14. Z Wave Protocol operates on _____ MHz Radio Frequency.

15. What do we use to connect TV to RPi?
   (a) Male HDMI
   (b) Female HDMI
   (c) Male HDMI and Adapter
   (d) Female HDMI and Adapter

Q.2 Answer the following questions. (Attempt any three) **(15)**
   A) Introduce Cloud and Fog Computing.
   B) List out all the Digital Sensors and explain any four.
   C) Give a brief explanation of DC Motors and Stepper Motors.
   D) Briefly introduce RFID

Q.3 A) Explain the working of Z-Wave Protocol in IoT. **(07)**
   B) Explain Application of Embedded System. **(08)**
<div align="center">OR</div>
   B) Explain MQTT and CoAP **(08)**

Q.4 A) Explain the working of ZigBee Protocol in IoT. **(07)**
<div align="center">OR</div>
   A) Explain IoE Architecture. **(07)**
   B) Explain challenges in IoT in terms of Scalability, Reliability, Security and Mobility. **(08)**