SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
Fall Semester 2018-2019
CAT II

Course : B.Tech(CSE)   Slot   : F1+TF1
Subject : Internet of Things   Subject Code : CSE3009
Duration : 90 Minutes   Max. Mark   : 50

Answer All(5x10 = 50)

1. Give a detailed design of M2M based domestic home energy monitoring and control system. Propose an infrastructure needed to actualize the design. List out various sensors and actuators needed for the design.

2. A) Assess the role of big data analytics in Internet of Things   [5]

   B) An IoT course student at VIT has planned to include an IoT device for measurement of temperature on Mars rover. A Mars rover is an automated motor vehicle that propels itself across the surface of the planet Mars upon arrival. Assume that the temperature sensor is a thermo resistive whose resistance typically increases with the temperature. Derive a linear approximation function to compute temperature for known resistance values? Calculate the temperature in Celsius (°C) for copper RTD at Freezing Point of Water is 500 Ohm and measured resistance is 500.43 Ohm if the temperature coefficient is 0.00043.   [5]

3. List out various sensors that are used in smartphones and describe their functionalities.

4. A) Do Arduino provides IDE Environment and Is it possible to build a commercial product based on Arduino? How?   [5]

   B) A wireless sensor network with group of sensor nodes have been deployed in a landslide prone site for giving the warning of landslide arrival in the area. These nodes are connected with a geophone which continuously receives earth's vibrations and transmits the signals to the base station. Considering the energy required for this network supplied by batteries which can be recharged but have to be maintained for long duration. How many nodes can be connected to single Gateway? How do you ensure maximum network reliability and suggest few criteria for the same.   [5]

5. Engrave an Arduino code for communication between the Arduino board and the smartphone using Bluetooth to turning ON and OFF a LED. Discusses complete procedure to interface these two devices.