Question Paper

Exam Date & Time: 12-Oct-2020 (02:00 PM - 05:30 PM)

BMS COLLEGE OF ENGINEERING

Autonomous Institute Affiliated to VTU, Supplementary Semester End Main Examinations, October 2020

Internet of Things [16CS5DCIOT]

Marks: 100 **Duration: 210 mins.**

CSE, Semester : V

Answer all the questions.

Instructions:
1. Answer FIVE full questions using the given internal choice
2. Missing data, if any, may be suitably assumed

1)		Explain the characteristics of IoT systems.	(5)
	a)		
	b)	Describe any two communication models of IoT systems.	(5)
	c)	Show that noise monitoring system is Level 4 IoT system.	(10)
2)		Assume that there are lights and fans to be controlled based on human presence as well as ambience of the room. The lights should be ON if the ambient light of the room falls below a certain level as well as a person is present in the room. The fan should be switched ON based on the human presence and if the temperature of the room is above a threshold value set. Design a home automation system for the above scenario.	(10)
	b)	The 'Knob' function sets the position of the servo motor according to the potentiometer value. Write an Arduino sketch to implement knob function using servo motor and potentiometer	(5)
	c)	Write an Arduino sketch to display the condition of flame detected as no flame, low flame or high flame on the serial monitor.	(5)
[OR]			
3)	a)	Design an IoT system which controls the servo motor rotation using Bluetooth. The Bluetooth module upon receiving command '1' should rotate servo motor from 0 to 180 degrees and should rotate servo motor from 180 to 0 degrees upon receiving command '2' from the android application. Also explain the advantage of using software serial library in the program.	(10)
	b)	Build a Configuration of two ESP8266 modules as access point and station respectively using appropriate commands.	(10)
4)		With a neat diagram describe the IoT reference architecture model.	(10)
	a)		
	b)	Justify how 6LoWPAN adaptation layer enables Internet connectivity to low power IoT devices.	(10)
[OR]			
5)		Evaluate the placement of fog computing layer before the data accumulation layer in IoT reference architecture model.	(10)
	a)		
	b)	Infer that the CoAP protocol is suitable for IoT applications over HTTP.	(10)
6)		Write a program to create Amazon EC2 with Auto scaling feature	(10)
	a)		
	b)	Justify how Xively Cloud provides Platform as a Service for IoT solutions?	(10)

7)	a)	Design a RFID based system to control the entry of persons into the laboratory. Assume that only registered persons are allowed in the lab. The grant of access indicated by glowing LED and denial is indicated by a buzzer sound.	(10)
	b)	Design a reverse car parking system using ultrasonic sensor. The buzzer connected at the output should beep when the car comes close to the obstacle.	(10)

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