U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

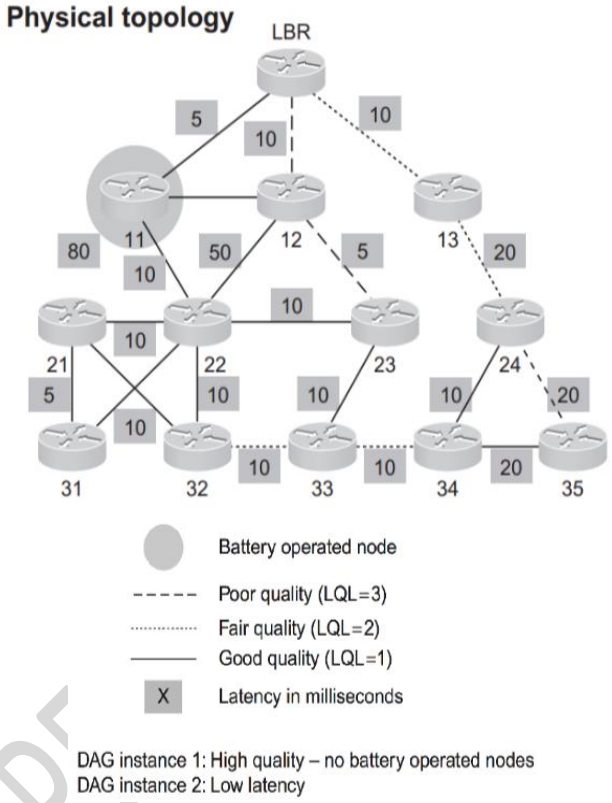
July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Computer Science & Engineering **Duration: 3 hrs.**
Course Code: 22CS5PCIOT **Max Marks: 100**
Course: Internet Of Things

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Analyze analogWrite() function in Arduino and discuss how digital Read/Write pins behave like analog Write pins	CO3	PO3	**05**
	b)	Design smart lighting system (circuit design and interfacing program) using LDR (Light dependent Resistor) and LED. When light intensity goes below 50% of sensor value the LED should glow automatically. Note: Pin configuration of LDR **Attach one leg of LDR to 5V and attach another leg to 110K resistor and A0. The end of 110K resistor should be connected to GND.**	CO3	PO3	**10**
	c)	Analyze and discuss the parameters to be considered while selecting sensors for an IoT system.	CO1	PO1	**05**
		OR			
2	a)	The shaft function sets the position of the servo motor according to potentiometer value. Write an Arduino program to implement the shaft function using servo motor and potentiometer.	CO3	PO3	**05**
	b)	Write an Ardino sketch to design an automatic water bottle filling system.	CO3	PO3	**05**
	c)	Analyze and design how an IoT system can be developed which controls switching ON/OFF of AC according to ambient temperature.	CO3	PO2	**10**
		UNIT – II			
3	a)	Design a wireless communication system to control the LED in the Master device by client device through push button through Bluetooth communication. Write the commands for the configuration of master and slave modules.	CO3	PO2	**10**

		b)	Identify and justify the protocol used by" Facebook Messenger, Amazon Web Services".	CO1	PO1	**05**
		c)	Provide the commands to configure an ESP8266 module as an access point & analyze the commands.	CO1	PO1	**05**
			UNIT - III			
	4	a)	Construct DODAG instance, i) Where DAG instance 1 should have high quality links - no battery operated nodes ii) DAG instance 2 should ensure Low latency. Also mention the path taken from node 31 to LBR in case of two DODAG instances.  DAG instance 1: High quality – no battery operated nodes DAG instance 2: Low latency	CO1	PO1	**10**
		b)	Write a python code to measure the intensity of light in a room using a single photocell and a capacitor connected to the raspberry pi.	CO3	PO3	**10**
			OR			
	5	a)	Analyze and name the headers in 6LoWPAN adaptation layer that are needed to support: i) Packet fragmentation and reassembly and ii) Link layer forwarding. Explain the header formats with diagrams. Explain the need of the 6LowPAN adaptation layer.	CO1	PO1	**10**
		b)	Draw the sequence diagram to query a resource state in IoTivity with a brief explanation.	CO2	PO2	**10**

			UNIT - IV			
	6	a)	Paraphrase the various services provided by the cloud for IoT networks.	CO2	PO2	**10**
		b)	Demonstrate and distinguish between Database Management Systems (DBMS) and Data Stream Management Systems (DSMS) with suitable diagrams.	CO2	PO2	**10**
			UNIT - V			
	7	a)	Signify the feature selection techniques for filter -based, Wrapper-based and embedded features suitable examples.	CO2	PO2	**10**
		b)	Illustrate the characteristics of real-time analytics with appropriate diagrams.	CO2	PO2	**10**

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