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

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E.

Branch: CSE (IoT & Cyber Security Including Blockchain)

Course Code: 23IC4PCIOT

Course: Internet of Things

Semester: IV

Duration: 3 hrs.

Max Marks: 100

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	<i>CO</i>	<i>PO</i>	Marks
	1	a)	With a neat diagram explain IoT reference model published by the IoT World Forum.	<i>CO3</i>	<i>PO3</i>	10
		b)	Describe the IoT data management and compute stack.	<i>CO3</i>	<i>PO3</i>	10
			UNIT - II			
	2	a)	Illustrate about LoRaWAN architecture and security with necessary diagrams.	<i>CO3</i>	<i>PO2</i>	10
		b)	With neat diagrams explain Bluetooth frame structure and Bluetooth Protocol Stack.	<i>CO3</i>	<i>PO3</i>	10
			OR			
	3	a)	With neat diagram, explain the working of I2C Communication Protocol	<i>CO1</i>	<i>PO2</i>	06
		b)	Explain the working of master and slave components in SPI communication	<i>CO1</i>	<i>PO2</i>	06
		c)	With appropriate diagrams, explain PHY and MAC format for IEEE 802.15.4 device types.	<i>CO3</i>	<i>PO2</i>	08
			UNIT - III			
	4	a)	Elaborate the optimizing IP for IoT from 6LoWPAN to 6Lo	<i>CO2</i>	<i>PO3</i>	10
		b)	Describe 6TiSCH along with the four schedule management mechanisms and forwarding models.	<i>CO2</i>	<i>PO3</i>	10
			OR			
	5	a)	Describe CoAP protocol with its message format and find out the differences between CoAP and MQTT protocol.	<i>CO1</i>	<i>PO2</i>	10
		b)	Discuss the device discovery functionality in Intel IOTivity.	<i>CO2</i>	<i>PO3</i>	10

			UNIT - IV			
	6	a)	What is Amazon autoscaling? What are its benefits?	CO2	PO3	05
		b)	Explain the Amazon EMR along with its advantages and disadvantages.	CO2	PO2	05
		c)	With diagram explain SDN architecture. Explain the role and usage of OpenFlow switches and OpenFlow flow tables in this architecture.	CO3	PO3	10
			UNIT - V			
	7	a)	If some plaintext m is representing a point M(3,3) on an Elliptical curve, E(F7), with equation, $y^2 = x^3 + 2x + 4$. Use Elliptical Curve Cryptographic method to generate the public and private keys using public point P(2,3). Using these keys find the ciphertext, using the ECC encryption algorithm. Apply ECC decryption algorithm to recover the point M. Given prime number $p=7$ with prime order $n=101$. Assume $d=99$ and $k=10$ for the computation.	CO1	PO2	10
		b)	Illustrate the three-layer IoT architecture and security issues in each layer.	CO3	PO3	10
