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

Autonomous Institute Affiliated to VTU

## January / February 2025 Semester End Main Examinations

**Programme: B.E.**

**Semester: VI**

**Branch: Institutional Elective**

**Duration: 3 hrs.**

**Course Code: 22EE6OE1IT**

**Max Marks: 100**

**Course: IoT and Applications**

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

<b>UNIT - I</b>			<b>CO</b>	<b>PO</b>	<b>Marks</b>
1	a)	What is an IoT platform?	<i>CO1</i>	<i>PO1</i>	<b>04</b>
	b)	How did the different phases of the internet create business and societal impacts?	<i>CO1</i>	<i>PO1</i>	<b>08</b>
	c)	How has IoT specifically improved home and building automation?	<i>CO2</i>	<i>PO1</i>	<b>08</b>
<b>OR</b>					
2	a)	Define IoT. State and explain any two characteristics of IoT.	<i>CO1</i>	<i>PO1</i>	<b>04</b>
	b)	Explain in detail, the role of IoT in Industry.	<i>CO1</i>	<i>PO1</i>	<b>08</b>
	c)	What is the design and deployment challenges that are associated with IoT?	<i>CO2</i>	<i>PO1</i>	<b>08</b>
<b>UNIT - II</b>					
3	a)	With a neat diagram, identify and label how actuators and sensors interact with the physical world.	<i>CO3</i>	<i>PO1</i>	<b>04</b>
	b)	Describe the role of Wireless Sensor Networks (WSN) in the Internet of Things (IoT). Why is WSN widely used for implementing IoT systems?	<i>CO3</i>	<i>PO1</i>	<b>08</b>
	c)	Evaluate the advantages, disadvantages, and applications of hydraulic actuators.	<i>CO3</i>	<i>PO1</i>	<b>08</b>
<b>OR</b>					
4	a)	Write the applications and challenges of wireless sensor network (WSN)?	<i>CO2</i>	<i>PO2</i>	<b>10</b>
	b)	Classify, explain and differentiate sensors based on its output.			
	c)	Evaluate the advantages, disadvantages, and applications of electrical actuators.	<i>CO2</i>	<i>PO2</i>	<b>10</b>

**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.

<b>UNIT - III</b>						
5	a)	What are the layers that are associated with the Internet Protocols?	<i>CO4</i>	<i>PO3</i>	<b>04</b>	
	b)	Write a short note on <ul style="list-style-type: none"> <li>• IPv4</li> <li>• 6LoWPAN</li> </ul>	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
	c)	Using examples and visual representations, explain in detail the three phases of TCP.	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
<b>OR</b>						
6	a)	Differentiate between Bluetooth and Zigbee (Any Five).	<i>CO4</i>	<i>PO3</i>	<b>04</b>	
	b)	Write a short note on <ul style="list-style-type: none"> <li>• Frame format of IEEE 802.3</li> <li>• IPv6</li> </ul>	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
	c)	What are Zigbee devices? How they are connected to form a topology. Explain each of these topologies with neat diagrams.	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
<b>UNIT - IV</b>						
7	a)	Describe the significance of block-wise transfers in CoAP and how they improve the protocol's efficiency.	<i>CO4</i>	<i>PO3</i>	<b>04</b>	
	b)	Illustrate the working of HTTP/CoAP proxying, explaining its mechanism and benefits in IoT applications.	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
	c)	Explain about COAP and differentiate it with MQTT Protocols (Four differences)	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
<b>OR</b>						
8	a)	Compare and contrast HTTP and AMQP, focusing on their key differences in terms of communication patterns, protocol design, and use cases.	<i>CO4</i>	<i>PO3</i>	<b>04</b>	
	b)	Describe in detail one specific classification of the CoAP protocol, explaining its features and use cases.	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
	c)	Define MQTT, describe how it works, and discuss the drawbacks of using MQTT in IoT applications.	<i>CO4</i>	<i>PO3</i>	<b>08</b>	
<b>UNIT - V</b>						
9	a)	Write a short note on Supervised and Unsupervised Learning with relevant examples	<i>CO5</i>	<i>PO2</i>	<b>04</b>	
	b)	Explain the concept of Platform as a Service (PaaS) and compare it with Function as a Service (FaaS), highlighting their key differences.	<i>CO5</i>	<i>PO2</i>	<b>08</b>	
	c)	Define fog computing, outline its architecture, and discuss scenarios in which fog computing is advantageous.	<i>CO5</i>	<i>PO2</i>	<b>08</b>	
<b>OR</b>						
10	a)	With the relevant examples, write a short note on structured and unstructured data.	<i>CO5</i>	<i>PO2</i>	<b>04</b>	
	b)	Why is IoT data analytics important?	<i>CO5</i>	<i>PO2</i>	<b>08</b>	
	c)	What is the concept of Everything and Anything as a service, highlighting its advantages, disadvantages and applications?	<i>CO5</i>	<i>PO2</i>	<b>08</b>	

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