Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec 2024
CA5EL53 Internet of Things

Programme: MCA / BCA-MCA (Integrated) Branch/Specialisation: Computer Application

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	What is the main purpose of IoT? (a) To connect devices (b) To increase internet speed (c) To replace humans (d) None of these	**1**	1	01	01	
	ii.	Which of the following is an IoT application? (a) Smart agriculture (b) Word processor (c) File compression (d) Email server	**1**	1	02	01	
	iii.	What is the function of sensors in IoT? (a) Actuate physical devices (b) Gather environmental data (c) Secure the network (d) Encrypt information	**1**	2	03	02	
	iv.	Which board is widely used for prototyping IoT applications? (a) CPU (b) Ethernet switch (c) Arduino (d) Optical mouse	**1**	2	05	03	
	v.	Which protocol is lightweight and used for machine-to-machine communication? (a) SMTP (b) HTTP (c) FTP (d) MQTT	**1**	1	05	02	

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vi.	What does CoAP stand for? (a) Communication Access Protocol (b) Constrained Application Protocol (c) Compact Access Protocol (d) Control Application Protocol	**1**	1	05	01
vii.	Which cloud platform offers IoT-specific services? (a) Microsoft Azure (b) VLC Media Player (c) Oracle DB (d) MySQL	**1**	1	06	02
viii.	What is a key concern for IoT security? (a) Redundancy (b) File sharing (c) Email backup (d) Data encryption	**1**	1	07	02
ix.	Which of the following is an example of Industry 4.0? (a) Social media campaign (b) Email automation (c) Smart manufacturing (d) Web browsing	**1**	1	07	04
x.	What is the role of digital twins in IoT? (a) Backup IoT networks (b) Compress large files (c) Send emails automatically (d) Create virtual models of real objects	**1**	2	02	01

Q.2	i.	Define IoT and explain any two real-world applications.	**2**	2	01	01
	ii.	Describe the logical design of IoT.	**3**	3	02	01
	iii.	Explain any two levels of IoT deployment.	**5**	4	02	01
OR	iv.	Describe the applications of Raspberry Pi in IoT with examples.	**5**	3	03	03
Q.3	i.	What is M2M? How it is different from IOT?	**2**	2	02	01
	ii.	Compare SDN (Software defined networking) and NFV (Network Function Virtualization).	**8**	4	02	01
OR	iii.	Explain Different data storage in IOT? Also explain IOT cloud based services.	**8**	4	02	02

Q.4	i.	What do you understand by WebSocket?	**3**	2	05	05
	ii.	Compare the efficiency and scalability of MQTT and CoAP protocols. When would you prefer one over the other?	**7**	4	02	05
OR	iii.	Describe the challenges of using HTTP for IoT communication. How do lightweight protocols overcome these limitations?	**7**	4	05	05
Q.5	i.	Differentiate between the Web of Things (WoT) and the Internet of Things (IoT) with suitable examples.	**4**	4	02	05
	ii.	Explain the concept of Unified Multitier WoT Architecture. How does it support scalability and interoperability?	**6**	4	02	05
OR	iii.	What is the role of platform middleware in WoT? Discuss its importance in enabling communication and data processing.	**6**	3	05	05
Q.6		Attempt any two:				
	i.	What are Future Factory Concepts in IoT? Explain how IoT is transforming industrial automation.	**5**	3	02	04
	ii.	Differentiate between Greenfield IoT and Brownfield IoT. Provide examples of each.	**5**	4	02	05
	iii.	Study and compare any two existing IoT platforms or middleware in terms of features, scalability, and usability.	**5**	4	05	04

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Marking Scheme

CA5EL53 (T) Internet of Things (T)

Q.1	i)	(a) To connect devices		**1**
	ii)	(a) Smart agriculture		**1**
	iii)	(b) Gather environmental data		**1**
	iv)	(c) Arduino		**1**
	v)	(d) MQTT		**1**
	vi)	(b) Constrained Application Protocol		**1**
	vii)	(a) Microsoft Azure		**1**
	viii)	(d) Data encryption		**1**
	ix)	(a) Smart manufacturing		**1**
	x)	(d) Create virtual models of real objects		**1**
Q.2	i.	Definition of IoT:	1 mark	**2**
		Explanation of two applications (0.5 marks each):	1 mark	
	ii.	Overview of logical design and its components:	1 mark	**3**
		Explanation of key elements (devices, communication, protocols, etc.):	2 marks	
	iii.	Brief overview of IoT deployment levels:	1 mark	**5**
		Explanation of the first deployment level:	2 marks	
		Explanation of the second deployment level:	2 marks	
OR	iv.	Introduction to Raspberry Pi and its role in IoT: 1 mark.		**5**
		Explanation of two or more applications:	2 marks	
		Examples to support the applications:	2 marks	
Q.3	i.	The definition of M2M carries	1 mark.	**2**
		The key differences between M2M and IoT should be explained concisely, with this section carrying the remaining	1 mark.	
	ii.	A clear explanation of SDN will be awarded	2 marks.	**8**
		Similarly, an explanation of NFV will also be awarded 2 marks. The comparison between SDN and NFV, with at least three well-structured points, will carry	4 marks.	
OR	iii.	The overview of different types of data storage used in IoT, such as edge, fog, and cloud storage, will carry	4 marks.	**8**
		The explanation of IoT cloud-based services, including data management, analytics, and remote access, will be awarded the remaining	4 marks.	
Q.4	i.	Definition and Purpose	1 mark	**3**
		Characteristics	1 mark	
		Use Cases	1 mark	
	ii.	Efficiency Comparison	3 marks	**7**
		Scalability Comparison	2 marks	
OR	iii.	Describe the challenges of using light weight protocols	3 marks 4 marks	**7**
Q.5	i.	Definition and Purpose	1 mark	**4**
		Key Differences	2 marks	
		Examples	1 mark	
	ii.	Overview of Architecture	2 marks	**6**
		Scalability Support	2 marks	
		Interoperability Support	2 marks	
OR	iii.	Definition and Function	2 marks	**6**
		Importance in Communication	2 marks	
		Importance in Data Processing	2 marks	
Q.6				
	i.	Definition of Future Factory Concepts	2 marks	**5**
		IoT's Impact on Industrial Automation	3 marks	
	ii.	Definition and Characteristics of Greenfield IoT	2 marks	**5**
		Definition and Characteristics of Brownfield IoT	2 marks	
		Example	1 marks	
	iii.	Comparison Criteria	1 mark	**5**
		Features Comparison	2 marks	
		Scalability Comparison	1 mark	
		Usability Comparison	1 mark	

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