ETC145

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RAMAIAH Institute of Technology

(Autonomous Institute, Affiliated to VTU)
(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with 'A+' Grade

SEMESTER END EXAMINATIONS – MAY 2023

Program	:	**B.E. – Common to ECE / EEE / EIE /ETE / MLE / ME / IEM / CH**	**Semester**	:	**I**
Course Name	:	**Introduction to Internet of Things (IoT)**	**Max. Marks**	:	**100**
Course Code	:	**ETC145**	**Duration**	:	**3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	Summarize the different layers of OSI w.r.t location, Data unit and functionality.	CO1	(05)
	b)	Write in brief about: i) M2M ii) IOP iii) IOE iii) CPS iv) Industry 4.0.	CO1	(10)
	c)	Differentiate between star and Mesh physical topology.	CO1	(05)
2.	a)	What is OSI reference model? List out the seven layers of OSI and explain their main functionalities in brief.	CO1	(08)
	b)	Write in brief about any two IoT applications for smart home.	CO1	(06)
	c)	Explain in brief about the different IoT components.	CO1	(06)

UNIT - II

3.	a)	Explain the functional blocks of a typical sensor node in IoT with diagram.	CO2	(08)
	b)	Discuss the fundamental properties of sensors used for successfully capturing and reporting a phenomenon.	CO2	(06)
	c)	Justify the statement 'A sensor's accuracy does not depend upon its resolution', with example.	CO2	(06)
4.	a)	Differentiate between sensor, actuator and transducer.	CO2	(06)
	b)	Discuss any four classes of actuator types.	CO2	(08)
	c)	List out and explain the characteristics of actuators required for their reliable operation.	CO2	(06)

UNIT - III

5.	a)	Explain in detail about the different parameters that must be considered for selection and design of an IoT Device.	CO3	(08)
	b)	What are the various decision-making approaches chosen for offloading data in IoT? Elaborate.	CO3	(06)
	c)	Determine the importance of choosing the right processing topologies and associated considerations while designing an IoT applications.	CO3	(06)

6.	a)	Explain the different types of Onsite and offsite processing in detail.	CO3	(08)
	b)	With a suitable example explain event detection using a collaborative processing technology.	CO3	(06)
	c)	What are the typical data offload locations available in the context of IoT?	CO3	(06)

UNIT- IV

7.	a)	What is virtualization? Explain the advantages of virtualization for end user and service Provider.	CO4	(08)
	b)	Elaborate on the different cloud simulation platforms with focus on their important features.	CO4	(06)
	c)	With a suitable diagram explain the components of an agricultural IoT.	CO4	(06)
8.	a)	With a neat diagram and suitable explanation differentiate between different deployment models available in cloud platform.	CO4	(08)
	b)	With a case study explain the concept of Sensors-as-a-Service.	CO4	(06)
	c)	Explain how agricultural IoT can help in the efficient distribution of water in agricultural fields.	CO4	(06)

UNIT - V

9.	a)	Differentiate between the characteristics of the sensors used for electrocardiogram (ECG) and electromyogram (EMG).	CO5	(06)
	b)	Discuss the pros and cons of using IoT in Healthcare.	CO5	(06)
	c)	What is vehicular IoT? Explain the functionality of Road Side Units (RSUs) in vehicular IoT.	CO5	(08)
10.	a)	Explain the importance of privacy and security in healthcare IoT with example scenario.	CO5	(06)
	b)	Discuss the role of machine learning in IoT systems. Explain different types of machine learning techniques with suitable examples.	CO5	(08)
	c)	List out the hardware components used in AmbuSens system and explain their functionality.	CO5	(06)

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