Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 130002

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Seventh Semester
Computer Science and Technology
U19CT716 – INTERNET OF THINGS
(Regulation 2019)

Time: Three Hours Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Enumerate the core "functional stack" components of the simplified IoT architecture.	2	K1	CO1
2.	List out four traditional networking technologies used between gateway and the data center.	2	K1	CO1
3.	What are the benefits of communicating small data in constrained devices?	2	K2	CO2
4.	Mention one key advantage of "cross-layer" design of IoT protocol stack for constrained devices, with an example.	2	K2	CO2
5.	What are the four design goals of IoT?	2	K1	CO3
6.	Draw a schematic diagram showing high-level view of hardware components in a wireless IoT.	2	K1	CO3
7.	List the key differences between "big data" and "big stream" paradigms.	2	K1	CO4
8.	Give an example for M2M technology.	2	K2	CO4
9.	How can IoT be used in an daily life?	2	K2	CO5
10.	Write two types of sensors used in structural health monitoring IoT systems.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	With a suitable diagram explain the M2M architecture and its components in detail, by motivating an appropriate use case differentiating M2M with respect to IoT.	13	K3	CO1
		(OR)			
	b)	Explain in detail the submodules of the 'communications network layer' (Layer2) of the core IoT functional stack.	13	K2	CO1
12.	a)	Provide a detailed overview of CoAP protocol, by explaining its various characteristics (with respect to HTTP and transport layer), and describing CoAP messaging model and reliability mechanism in detail with appropriate schematic diagrams.	13	K1	CO2
		(OR)			
	b)	i. Write two application layer ports and their associated protocols. ii. Explain briefly six application layer protocols / communication services for IoT.	13	K1	CO2
13.	a)	With suitable schematic block diagrams, explain the hardware profiles of Arduino and Raspberry Pi.	13	K1	CO3
		(OR)			
	b)	i. Explain the logical design of IoT with emphasis on various communication models. ii. Explain with schematic diagrams any two communication APIs of IoT.	13	K1	CO3
14.	a)	Explain the need for cloud service models, by highlighting the weaknesses of their traditional counterparts.	13	K2	CO4
		(OR)			
	b)	Write short notes on		K2	CO4
		i. Structured vs unstructured data.	6		
		ii. Data Analytic challenges in IoT.	7		
15.	a)	With a suitable diagram, describe the IoT architectural framework for smart home application. Explain the protocols and technologies used in the framework.	13	K3	CO5
		(OR)			
	b)	Explain a suitable IoT strategy for industrial applications and describe an appropriate IoT architecture by highlighting its application-specific features.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	For a simple health monitoring IoT application, describe the goals, suitable sensors (and their needs), embedded device architecture (and their features), and appropriate communication technologies and protocols needed by providing an end-to-end network diagram from data generation to cloud analytics.	15	K5	CO5
		(OR)			
	b)	Explain SCADA system by elaborately discussing with a suitable diagram the DNP3 SCADA over IP protocol stack, along with a detailed description on tunnelling legacy SCADA over IP networks over different scenarios of using raw socket TCP or UDP.	15	K4	CO2