SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Academic Year: 2022-2023

Program's: B Tech

Year: II Semester: Forth

Stream's: Computer Science

Subject: Design and Applications of Internet of Things

Time: 03 hrs. (10:00 AM to01:00 PM)

Date: 29 /04 / 2023

No. of Pages: 02

Marks: 100

Final Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. _1___ is compulsory.
2) Out of remaining questions, attempt any __4___ questions.
3) **In all ___5_ questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right hand side indicate full marks.**
7) **Assume Suitable data if necessary.**

Q1		Answer briefly:	
CO-1 ; SO-1 ;BL-2	a.	Describe the power management techniques in an IoT system. How an energy harvesting can be helpful while designing an IoT device?	[5]
CO-2 ; SO-1 ;BL-3	b.	Explain types of sensors and actuators in IoT design. Mention the use of pressure sensor and humid sensors.	[5]
CO-3 ; SO-1; BL-2	c.	Describe, how business layer is different than perception layer in an IoT enabled system.	[5]
CO-4 ; SO-2 ; BL-3	d.	Explain benefits of using cloud computing in IoT design. Give suitable example of any cloud based IoT system.	[5]
Q2 CO-2; SO-1; BL-3	a	Design and explain an IoT enabled cloud architecture. How it is relevant in resource sharing?	[10]
	b	Describe the steps of IoT System Design Methodology. Explain the role of functional view specification.	[10]
Q3 CO-2; SO-2; BL-4	a	Justify the role of IoT protocols. How for component interfacing I2C and SPI are different than each other?	[10]
	b	Illustrate the applications of Motion, Gas and Temperature Sensors in IoT. Explain their applications in managing smart kitchen.	[10]
Q4 CO-3; SO-2; BL-3	a	Explain the perspective behind use of 5-layer IoT protocol architecture. Justify how it is different from 3-layer protocol architecture of IoT?	[10]
	b	Explain relevance of RFID. Identify, how smart parking can be configured with RFID and other applicable components?	[10]

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Q5 CO-4; SO-3; BL-5	a	Identify relevant components and construct an IoT system design for Smart Super Shop monitoring system. Explain, any suitable cloud platform can be helpful for this.	[10]
	b	Justify the role of IoT reference architecture. Explain all salient views which can be observed thorough this reference architecture.	[10]
Q6 CO-3; SO-2; BL-4	a	Justify the relevance of IoT communication models and their types with diagrams.	[10]
	b	Identify and explain the types of cloud-based services which can be aligned with IoT enabled systems. Mention the name of top three cloud service providers	[10]
Q7 CO-4; SO-3; BL-3	a	Prepare a diagrammatic representation of IoT level 4 and IoT level 5. Describe significant variations in them.	[10]
	b	Explain, how cloud integration of an IoT product can be versatile to sustain in market?	[10]