Time:3 Hours **Total Marks: 80**

N.B. (1) Question no. 1 is compulsory.
(2) Answer any 3 question out of remaining questions.
(3) Assume suitable data if necessary.
(4) Illustrate your answers with neat sketches.

Q1		Solve any 4 out of six	20
	a	Define Mechatronics. Discuss its key elements and integrated design issues.	
	b	How does IoT impact various domains like industry, healthcare, and transportation?	
	c	What are Restful Principles	
	d	Give an Example of Use of IOT at Home	
	e	Explain the working of Stepper motor	
	f	Explain any one tool in Hadoop Eco-system	
Q2	a	Explain the architecture of the 8051 micro-controller.	10
	b	Describe the technologies involved in IoT	10
Q3	a	Introduce Apache Hadoop and its application in IoT. How does Hadoop MapReduce facilitate batch data analysis?	10
	b	Define cloud computing and fog computing. Discuss the role of cloud computing in IoT.	10
Q4	a	Discuss the importance of protocol standardization for IoT. Explain machine-to-machine (M2M) and WSN protocols.	10
	b	Describe the addressing modes supported by the 8051 microcontroller. Provide examples for each addressing mode.	10
Q5	a	Evaluate the significance of IEEE 802.15.4, Zigbee, and IPv6 technologies for IoT.	10
	b	Compare and contrast traditional design with Mechatronics design. Discuss the advantages and disadvantages of Mechatronics in different applications.	10
Q6		Solve any Four out of Six. Each question carries five marks	20
	a	Explain the Need for IOT	
	b	Write a short note on HTTP	
	c	Give the advantages of Micro-processor & Micro-controller	
	d	How does Mechatronics contribute to modern systems design?	
	e	Draw the Hadoop eco-system	
	f	Explain how Arduino is beneficial for development of IOT devices	

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