7th Semester Regular/Back Examination: 2024-25
SUBJECT: Internet of Things
BRANCH(S): AERO, AE, AME, AEIE, AUTO, BIOMED, BIOTECH, C&EE, CIVIL, CST, CSE, CSIT, CSEAIME, EEE, ELECTRICAL, ECE, ELECTRONICS & C.E, ETC, EIE, IT, MANUTECH, MMEAM, MECH, MME, METTA, MINERAL, PLASTIC
Time: 3 Hours
Max Marks: 100
Q.Code: R048
Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right-hand margin indicate marks.

Part-I

Q1		Answer the following questions	(2 x 10)
	a)	Why do IoT systems have to be self-adapting and self-configuring capabilities?	
	b)	What are the benefits of using a M2M architecture?	
	c)	What are the architectural constraints of REST?	
	d)	Mention the role of cloud computing in IoT.	
	e)	What is the function of YANG modules in device management?	
	f)	Write a Python program for blinking LED using Raspberry Pi GPIO pin 18.	
	g)	What are the key elements of NFV architecture?	
	h)	What is the use of SPI and I2C protocol on Raspberry Pi?	
	i)	How is Raspberry Pi different from a desktop computer?	
	j)	Write the difference between Raspberry Pi and Beaglebone Black.	

Part-II

Q2		Only Focused-Short Answer Type Questions (Answer Any Eight out of Twelve)	(6 × 8)
	a)	Discuss the advantages of using Python for IoT development. Why is Python a popular choice for IoT applications, and what features make it suitable for tasks like data collection, processing, and device communication?	
	b)	Compare and contrast Bluetooth Low Energy (BLE) with traditional Bluetooth technology. Why is BLE essential for IoT applications, and what are its main benefits in terms of power consumption and connectivity?	
	c)	Explain the IoT level-3 architecture.	
	d)	What is the difference between SDN and NFV?	
	e)	Describe the hardware and features of the Raspberry Pi board. How do its specifications make it suitable for IoT applications?	
	f)	Explain the key principles of Industry 4.0 and discuss how these concepts transform traditional industries into smart, connected systems.	
	g)	What is the difference between machines in M2M and things in IOT? Explain with examples.	
	h)	Draw the flow diagram of different steps related to IoT designing methodology.	

i) Define the role of Android / IOS App Development tools in IoT.

j) How Big Data can be used in IoT? Explain.

k) Evaluate the Raspberry Pi against other IoT development boards such as pcDuino, BeagleBone Black, and Cubieboard in terms of processing power, GPIO options, and ease of development.

l) Discuss the use cases related to NFV.

Part-III
Only Long Answer Type Questions (Answer Any Two out of Four)

Q3   **a)**   Draw the block diagram of the RFID reader and explain the operation.   **(8)**

     b)   What is IP addressing? Explain its types in detail and which type of addressing is best suited for IoT devices.   **(8)**

Q4   Concerning agriculture as a case study, describe the operational and functional view with a neat diagram while designing an IoT-based system.   **(16)**

Q5   What are the different layers of IoT protocols? Explain the function of each layer.   **(16)**

Q6   Construct the design of a smart home with Raspberry Pi and other hardware devices with a neat sketch.   **(16)**