

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: M.TECH/PRE-PHD  
BRANCH: CSE**

**SEMESTER : I  
SESSION : MO/2025**

**SUBJECT: CS534 INTERNET OF THINGS**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data handbook/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Elaborate the significance of M2M technology in IoT. Categorize real world applications of IoT technologies.	[5] 1	2
Q.1(b)	Draw the layered architecture of IoT systems. How do the perception, network, and application layers interact to enable end-to-end IoT functionality?	[5] 1	4
Q.2(a)	Describe the role of sensors & actuators. An IoT device must last for 5 years on a 2400 mAh battery. The device is active for 0.5 seconds every cycle, drawing 80 mA. The sleep current is 0.015 mA. How long must the sleep cycle be in seconds?	[5] 2	2
Q.2(b)	How do reactive and proactive strategies affect data communication? Discuss RPL protocol implementation for IoT use case.	[5] 2	4
Q.3(a)	Summarize the key characteristics of prevalent IoT physical network technologies.	[5] 3	2
Q.3(b)	Compare MQTT, CoAP, and REST communication models. In what scenarios would each be most effective for IoT applications?	[5] 3	4
Q.4(a)	Describe the involvement of IoT system components in data management operations?	[5] 3	2
Q.4(b)	Differentiate between edge, fog, and cloud computing models in IoT. What are the trade-offs among them in terms of latency, scalability, and data privacy?	[5] 4	4
Q.5(a)	Identify key vulnerabilities in IoT systems. How can encryption, authentication, and key management mechanisms mitigate these risks?	[5] 4	1
Q.5(b)	How can AI/ML techniques enhance IoT-based predictive maintenance systems? Illustrate with an example.	[5] 5	3

:20/11/2025:E