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Bengaluru

Mid Term Examinations - October 2026

Date: 09/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: CIT2501 **Course Name:** Wireless Communication in IoT

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	48	42

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	**Mention two optimization goals of WSN design.**	2	CO2	BT2
2	**What is the difference between IoT and M2M?**	2	CO1	BT2
3	**Interpret “smart” device?**	2	CO1	BT2
4	**Give an example of energy harvesting for IoT nodes.**	2	CO1	BT2
5	**Compare Arduino, Raspberry Pi, and BeagleBone Black as IoT hardware platforms.**	2	CO1	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	**Compare Arduino, Raspberry Pi, and BeagleBone Black as IoT hardware platforms.**	10	CO1	BT3
7	**Explain the concept of Machine-to-Machine (M2M) communication in IoT. Discuss its role in enabling autonomous interactions between devices.**	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	A weather-monitoring station operates in a **15-minute cycle**. It consumes **20 mW for 30 seconds** while taking measurements and transmitting data. During the remaining time, it consumes **0.20 mW**. A solar harvester generates **30 mW for 4 effective sun-hours per day**, with a conversion and storage efficiency of **60%**. Calculate: 1. Energy consumed per cycle. 2. Daily energy consumption. 3. Usable harvested energy. 4. Daily energy margin. 5. Whether the system is energy-neutral.	10	CO2	BT3
9	Explain the challenges related to energy consumption and security in WSNs and describe how these are addressed in the design of IoT systems.	10	CO2	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

PTO (Please Turn Over)

10	A weather-monitoring station operates in a **15-minute cycle**. It consumes **20 mW for 30 seconds** while taking measurements and transmitting data. During the remaining time, it consumes **0.20 mW**. A solar harvester generates **30 mW for 4 effective sun-hours per day**, with a conversion and storage efficiency of **60%**. Calculate: 1. Energy consumed per cycle. 2. Daily energy consumption. 3. Usable harvested energy. 4. Daily energy margin. 5. Whether the system is energy-neutral.	10	CO2	BT3
11	Describe the single-node architecture of a wireless sensor node, detailing the role of each major hardware component and explaining how they work together.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	**Describe the energy harvesting techniques used in sensor nodes.**	10	CO1	BT3
13	**Explain the functions at each level in the Oracle IoT framework for the processes and services using the cloud?**	10	CO1	BT3