



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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Mid - Term Examinations - March 2026

Date: 14-03-2026

Time: 02:00pm - 03:30pm

School: SOE	Program: B. Tech		
Course Code : ECE3023	Course Name: Wireless Sensor Networks & IoT		
Semester: VI	Max Marks: 50	Weightage: 25%	

CO - Levels	C01	C02	C03	C04	C05	C06
Marks	26	24				

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

5Q x 2M=10M

1	State the difference between infrastructure mode and ad hoc mode in wireless networks?	2 Marks	L1	C01
2	Explain in brief the hidden node problem in ad hoc networks?	2 Marks	L1	C01
3	Categorize at least two differences between hardware address and IP address of a wireless node in a network.	2 Marks	L1	C01
4	Identify the path loss exponent in the free space propagation model and provide a theoretical justification for the increased free space path loss observed at higher frequencies.	2 Marks	L1	C02
5	State the Friis transmission equation and explain how the received power varies with the distance between transmitting and receiving antennas.	2 Marks	L1	C02

Part B

Answer the Questions.

Total Marks 40M

6.	With the help of a neat block diagram, draw the schematic of a wireless sensor node. Explain the working and functions of each sub block.	20 Marks	L2	CO1
Or				
7.	Explain the various transmission impairments in a wireless channel.	20 Marks	L2	CO1

8.	a.	Describe briefly, on the requirement of regenerative repeaters or base stations in wireless cellular networks.	10 Marks	L2	CO2
	b.	Consider a wireless communication link operating at 1.8 GHz frequency. The gain of the transmitter antenna is 10 dBi and the receiver antenna gain is 5 dBi. If the transmitter and receiver are separated by 200 meters, compute the path loss in dB using Friis transmission equation under free space propagation conditions.	10 Marks	L3	CO2
Or					
9.	a.	With the help of a simple diagram, explain the working of a wireless cellular network.	10 Marks	L2	CO2
	b.	A satellite communication system operates at 6 GHz frequency. The transmitting antenna has a gain of 15 dBi and the receiving antenna has a gain of 10 dBi. If the distance between the transmitter and receiver is 500 meters and the transmitted power is 30 dBm, determine the received power in dBm using the Friis transmission equation assuming free space propagation.	10 Marks	L3	CO2