Reg. No. : | | | | | | | | | | | |

Question Paper Code:R5I05

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fifth Semester

CSE (Internet of things)

R21UIO505-SENSORS AND ACTUATORS FOR IOT

(Regulations R2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Define a sensor and give two examples.	CO1- U
2.	How does IoT architecture relate to sensors and actuators?	CO1-U
3.	Write short notes on ultrasonic ranging	CO1-U
4.	Classify sensors based on their functionality	CO1-U
5.	Define Sensors and actuators and also explain how they interact with the physical world	CO1-U
6.	Mention the function of an H-Bridge circuit.	CO1-U
7.	Mention two functions of GPIO pins.	CO1-U
8.	What is the role of cloud computing in IoT?	CO1-U
9.	Draw the diagram for the implementation of IoT technology in Smart Parking.	CO1-U
10.	Identify the Sensors and Actuators are used to implement IoT technology smart roads in smart cities.	CO2-App

PART – B (5 x 16= 80 Marks)

11. (a) Elaborate on different types of measurement errors and error   CO1- U   (16)
analysis techniques.

Or

(b) Discuss various types of sensors and actuators used in IoT..   CO1- U   (16)

12. (a) Compare and analyze the working principles and applications of RF beacons, reflective beacons, and LIDAR in IoT-based systems, highlighting their advantages, limitations, and suitable use cases.   CO3- Ana   (16)

<div align="center">Or</div>

(b) Analyze the working principles, advantages, and limitations of various proximity sensors (such as inductive, capacitive, ultrasonic, and infrared), and compare their suitability for different IoT applications with relevant examples   CO3- Ana   (16)

13. (a) Develop a stepper motor control circuit to rotate a platform 90°, 180°, and 360° upon button press.   CO2- App   (16)

<div align="center">Or</div>

(b) Design a simple circuit using a DC motor to open and close a small gate automatically.   CO2- App   (16)

14. (a) An MNC has an employment service that follows a set of rules to obtain and enter candidate information into EMS. Suggest which constrained application protocol is suitable for this particular application, and briefly summarize your answer with a neat diagram   CO3- Ana   (16)

<div align="center">Or</div>

(b) Assume that ATM gateway sends request for the banking service response and receives the account information from a Bank Msg Service. How does a SOAP request or response communicate between two applications, viz. one at Gateway ATM_G and other at Bank Msg Service using two web objects, viz. one at www.ATMG.com and other www.Bankservice.com   CO3- Ana   (16)

15. (a) Design an IoT set up for identifying vacant spaces and slot IDs using ultrasonic pulses and back reflections to the transceiver (emitter and sensors) at the coordinator.   CO2- App   (16)

<div align="center">Or</div>

(b) Develop a Mobile Baby Care Application for a Smart IoT Baby Care System.   CO2- App   (16)

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