Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – MARCH 2026

Date: 11-03- 2026 **Time:** 11.45am to 01.15pm

School: SOCSE	**Program:** B.Tech(CSE-Data Science)	
Course Code :CSD1709	**Course Name:** Edge AI for IoT Analytics	
Semester: VI	**Max Marks**:50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**
Marks	**25**	**25**

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	**Differentiate** between IoT devices and Edge devices.	**2 Marks**	**L1**	**CO1**
2	**State** two advantage of Edge computing over traditional Cloud computing.	**2 Marks**	**L1**	**CO1**
3	**List** two hardware constraints of Edge devices.	**2 Marks**	**L11**	**CO1**
4	**State** the difference between MQTT and CoAP.	**2 Marks**	**L**	**CO1**
5	**Compare** TinyML and traditional ML deployment.	**2 Marks**	**L1**	**CO1**

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	**Differentiate** between Raspberry Pi, NVIDIA Jetson, Google Coral, and Arduino Nano 33 BLE Provide one example use case.	**10 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	**Describe** quantization and pruning as techniques for optimizing ML models on edge devices. Discuss potential trade-offs.	**10 Marks**	**L2**	**CO1**

8.	**a.**	**Explain** how can knowledge distillation be used as an optimization technique for edge deployment. Compare TensorFlow Lite and Edge Impulse for converting a pre-trained CNN model to edge inference, including workflow steps and handling of power/memory constraints.	**15 Marks**	**L2**	**CO2**
		Or			
9.	**a.**	**Describe** the layered architectures of IoT and Edge devices, from perception to application layers. Illustrate with a diagram how BLE and LoRaWAN integrate into an Edge AI system for remote environmental monitoring. Analyze challenges like interoperability.	**15 Marks**	**L3**	**CO2**

10.	**a.**	**Elaborate** on core concepts of Edge AI and its evolution from traditional cloud AI. Discuss TinyML principles, including model compression for microcontrollers, with an industry trend example. Compare with embedded AI frameworks.	**15 Marks**	**L3**	**CO2**
		Or			
11.	**a.**	**Outline** the end-to-end deployment workflow from cloud training to on-device inference using PyTorch Mobile on NVIDIA Jetson. Analyze how power, memory, and latency constraints impact real-time IoT analytics.	**15 Marks**	**L3**	**CO2**