Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 18 – 12- 2025 **Time:** 01:00pm – 04:00pm

School: SOCSE	**Program**: B.Tech. CST-CDV	
Course Code: CDV3407	**Course Name:** AIOps – AI-Driven DevOps & IT Operations	
Semester: VII	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**26**	**24**	**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. **10Q x 2M=20M**

1.	Distinguish observability from monitoring.	**2 Marks**	**L2**	**CO1**
2.	Predict outcomes using AIOps analysis.	**2 Marks**	**L2**	**CO1**
3.	Explain the differences between the two AIOps layers.	**2 Marks**	**L2**	**CO1**
4.	Summarize **what incident clustering is and** discuss **why it is useful in IT operations.**	**2 Marks**	**L2**	**CO2**
5.	Identify **what a correlation engine does within an AIOps system.**	**2 Marks**	**L2**	**CO2**
6.	Select an AI method that can predict hardware failures and explain why it is suitable	**2 Marks**	**L1**	**CO3**
7.	Explain how NLP can be applied to prioritize alerts generated from monitoring logs.	**2 Marks**	**L2**	**CO3**
8.	Identify an NLP model capable of classifying alert urgency and justify your selection.	**2 Marks**	**L1**	**CO3**
9.	Discuss how an SRE-aligned AIOps technique can be used to interpret past incidents and uncover root causes.	**2 Marks**	**L2**	**CO4**
10.	Recognize an AIOps platform that integrates with Prometheus to ingest and visualize cloud-native metrics, and explain its use.	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Explain event correlation and give an example of how machine learning enhances it beyond rule-based systems.	**10 Marks**	**L2**	**CO1**
	b.	Distinguish logs, metrics, and traces, and describe how each contributes to understanding multi-service failures.	**10 Marks**	**L2**	**CO1**
		Or			
12.	**a.**	Discuss the challenges of adopting AIOps, including issues in data, modeling, and system integration.	**10 Marks**	**L2**	**CO1**
	b.	Prepare a phased transformation plan that shows how a traditional monitoring setup can be converted into an automated AIOps framework in a large enterprise.	**10 Marks**	**L3**	**CO1**

13.	**a.**	Illustrate how ingestion, noise reduction, pattern detection, and correlation engines work together in an AIOps pipeline, and show how these components collectively support root-cause analysis with an example.	**10 Marks**	**L3**	**CO2**
	b.	Explain (Apply-aligned alternative: Interpret) what alert fatigue means and demonstrate how AIOps-based noise-reduction methods help minimize it and improve business outcomes.	**10 Marks**	**L3**	**CO2**
		Or			
14.	**a.**	Outline a real-time AIOps architecture using Kafka and Fluentd and **explain** how it enables real-time insights and automated actions.	**10 Marks**	**L2**	**CO2**
	b.	Scenario An e-commerce company experiences frequent multi-service errors across payment, catalog, and order-management systems. The AIOps solution uses correlation engines to link alerts, topology data, and events for quick diagnosis. Question Breakdown how correlation engines operate within an AIOps system and categorize the types of correlations used to trace the root cause of service disruptions.	**10 Marks**	**L4**	**CO2**

15.	**a.**	Develop **an NLP-based system to prioritize alerts in high-volume IT ticket environments.**	**10 Marks**	**L3**	**CO3**
	b.	Apply supervised learning to detect compromised accounts and describe the data preparation and model-selection steps.	**10 Marks**	**L3**	**CO3**
		Or			
16.	**a.**	Write a post-incident analysis template for microservices-based systems using RCA (Root-Cause Analysis) techniques.	**10 Marks**	**L3**	**CO3**
	b.	A financial services company wants to predict CPU demand for its trading servers to avoid performance drops during market peak hours. The team is planning a 24-hour forecast using an AIOps-based time-series model. Question Calculate the projected CPU usage for the next 24 hours using time-series forecasting and illustrate how the model detects potential overload conditions.	**10 Marks**	**L4**	**CO3**

17.	**a.**	**Propose** methods to **modify** and enrich logs using AIOps tools (e.g., Elastic) to automatically **map** error codes to knowledge-base solutions.	**10 Marks**	**L3**	**CO4**
	b.	Employ AIOps methods to ensure high transaction reliability and detect financial anomalies in a FinTech system.	**10 Marks**	**L3**	**CO4**
		Or			
18.	**a.**	Use **cloud-native AIOps techniques to** control **cost and** predict **resource scaling for dynamic Kubernetes workloads.**	**10 Marks**	**L3**	**CO4**
	b.	Scenario A large hospital experiences unpredictable system slowdowns that threaten patient-care applications such as electronic health records (EHR), ICU monitoring dashboards, and appointment systems. The IT team introduces an AIOps platform to analyze log anomalies before these failures occur. Question Analyze how anomaly detection in log data using an AIOps platform can help prevent critical hospital IT outages and safeguard patient services.	**10 Marks**	**L4**	**CO4**