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Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CSG2501 **Course Name:** Gen AI for Data Science

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

CO - Levels	CO1	CO2
Marks	46	44

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Explain how Generative AI differs from traditional machine learning.	2	CO1	BT2
2	Contrast generative models with discriminative models using a simple real-world example.	2	CO1	BT2
3	Classify probability distributions into suitable categories used in machine learning and illustrate one example.	2	CO1	BT2
4	**Identify** the latent space in a VAE used for generating synthetic patient-record data and **select** a suitable role for the latent representation.	2	CO2	BT3
5	A VAE produces blurry reconstructed samples. **Identify** the two major loss components that can be adjusted and **select** the component responsible for measuring similarity between input and reconstruction.	2	CO2	BT3

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the major stages in the evolution of AI and relate the emergence of Generative AI to advances in deep learning.	10	CO1	BT2
7	Contrast generative and discriminative approaches in machine learning and relate their differences to real-world applications.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Explain the importance of Generative AI in Data Science, including data augmentation, synthetic data generation, NLP, image synthesis and recommendation systems.	10	CO1	BT2
9	Explain explicit and implicit density estimation and illustrate their role in representing data distributions in Generative AI.	10	CO1	BT2

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	A company wants to generate synthetic customer records using a VAE. **Construct** a suitable data-processing and generation workflow from the original records to newly generated records, and select the stage at which the latent representation is used to generate new samples.	10	CO2	BT3

11	**Construct** a VAE-based solution for generating synthetic numerical data. **Develop** the complete data flow from input through encoder, latent space and decoder to reconstructed output.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	A VAE uses latent variables represented by a mean and variance. **Apply** the reparameterization trick to **construct** the latent-sample equation and **identify** how the equation enables backpropagation during training.	10	CO2	BT3
13	A GAN is used to generate synthetic photographs. **Develop** the training flow of the generator and discriminator and **identify** how the two networks interact during adversarial training.	10	CO2	BT3