Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 16 – 12- 2025 **Time:** 01:00pm – 04:00pm

School: SOCSE	**Program:** B.Tech	
Course Code: CAI3411	**Course Name:** Generative AI	
Semester: VII	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**26**	**26**	**24**	**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 the Questions. Each question carries 2marks. 10Q x 2M=20M

1.	Differentiate discriminative modeling from generative modeling.	**2 Marks**	**L2**	**CO1**
2.	List the applications of LLM's.	**2 Marks**	**L1**	**CO1**
3.	What is GPT? List its variants and applications.	**2 Marks**	**L2**	**CO1**
4.	Define the working of Encoder and decoder in implementing attention mechanism.	**2 Marks**	**L1**	**CO2**
5.	Give examples for using attention mechanism in text and video.	**2 Marks**	**L1**	**CO2**
6.	Outline the steps involved in RAG pipeline.	**2 Marks**	**L2**	**CO2**
7.	List types of chains in LangChain framework.	**2 Marks**	**L2**	**CO3**
8.	Name any 5 types of memory in LangChain.	**2 Marks**	**L1**	**CO3**
9.	Name any 5 applications GAN.	**2 Marks**	**L1**	**CO4**
10.	Compare NST and CycleGAN.	**2 Marks**	**L2**	**CO4**

Part B

Answer any ONE FULL Question from each module. **Total Marks 80M**

11.	**a.**	Illustrate Chain prompts and Aggregate responses with an example.	**5 Marks**	**L2**	**CO1**
	b.	Explain in detail the four parameters that are used with text generative models.	**5 Marks**	**L2**	**CO1**
	c.	Explain generative models for any four data modalities.	**10 Marks**	**L1**	**CO1**
		OR			
12.	**a.**	Explain 5 different LLM's and their applications.	**5 Marks**	**L1**	**CO1**
	b.	What are safety and fallback responses? Identify few scenarios when the model is likely to refuse a response.	**5 Marks**	**L3**	**CO1**
	c.	Discuss in detail the four components of a prompt with suitable examples.	**10 Marks**	**L1**	**CO1**

13.	**a.**	Explain BERT with its features using an example of finding a missing word in a sentence.	**5 Marks**	**L2**	**CO2**
	b.	Construct the query/key/value vectors of the multi-headed attention used in the transformers with neat illustrations.	**5 Marks**	**L3**	**CO2**
	c.	Apply BPE encoding technique on the given text corpus and construct the vocabulary. [Continue till **no further merging** is possible]. Write the constructed vocabulary and the merging rules. Text corpus: "new new new newer newest newest lower lower lowest"	**10 Marks**	**L1**	**CO2**
		OR			
14.	**a.**	Explain the methods of text tokenization namely word, character and subword with detailed step-by-step procedure of the byte-pair-encoding method of tokenizing a text.	**5 Marks**	**L2**	**CO2**
	b.	Explain the different types of RNN with the mathematical functions to compute its hidden state.	**5 Marks**	**L2**	**CO2**
	c.	Using the text corpus "low low lower lowest new new newer newest wide wide wide wider widest" apply the BPE algorithm's **tokenization** to generate the tokens using the below given vocabulary. VOCABULARY = (l, o, w, e, r, n, s, t, i, d, _, es, est, er, lo, low, ne, new, wi, wid, wide). Merging Rules: (l, o)->lo, (lo, w)->low, (e, r)->er, (e, s)->es, (es, t)->est, (n, e)->ne, (ne, w)->new, (w, i)->wi, (wi, d)->wid, (wid, e)->wide.	**10 Marks**	**L3**	**CO2**

15.	**a.**	What are the techniques to mitigate the limitations of LLM's using LangChain.	**5 Marks**	**L1**	**CO3**
	b.	What is an agent in langchain? Explain the tools used by an agent and agent workflow with a diagram.	**5 Marks**	**L2**	**CO3**
	c.	Explain different types of chains in LangChain with diagrammatical representations.	**10 Marks**	**L2**	**CO3**
OR					
16.	**a.**	Explain retriever component in LangChain and its types.	**5 Marks**	**L2**	**CO3**
	b.	What is memory in LangChain? Explain different types of memory in LangChain.	**5 Marks**	**L2**	**CO3**
	c.	Apply simple sequential chain to generate the response for below prompt with code snippets. Prompt: "What is a good name for a company building gaming laptop".	**10 Marks**	**L3**	**CO3**

17.	**a.**	Explain the architecture of a GAN.	**5 Marks**	**L2**	**CO4**
	b.	Explain VAE's with its specific features.	**5 Marks**	**L2**	**CO4**
	c.	Explain architecture of NST.	**10 Marks**	**L2**	**CO4**
OR					
18.	**a.**	Explain the different components diffusion models namely forward and reverse diffusion with their applications.	**5 Marks**	**L1**	**CO4**
	b.	Discuss the hyper parameters of auto encoders.	**5 Marks**	**L3**	**CO4**
	c.	Explain the architecture of Cycle GAN with roles of generator and discriminator.	**10 Marks**	**L1**	**CO4**