

Model Question Paper

Seventh Semester BE Degree Examination

Large Language Modeling

Time: 3 Hours (180 Minutes)

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

Module -1			M	L	C
Q1	a.	Explain the evolution of Language AI and discuss the importance of Large Language Models in modern AI applications.	06	L2	CO1
	b.	With examples Compare Bag-of-Words and Dense Vector Embeddings (word2vec).	06	L2	CO1
	c.	Explain Word, Subword, Character and Byte tokenization techniques. Justify why Byte Pair Encoding (BPE) is widely adopted in modern LLMs.	08	L2	CO1
OR					
Q2	a.	Explain the encoder-only and decoder-only transformer architectures with suitable applications.	06	L2	CO1
	b.	Describe the working of the self-attention mechanism with a neat diagram.	06	L2	CO1
	c.	Explain the societal and ethical challenges involved in deploying Large Language Models in real-world applications.	08	L2	CO1
Module- 2					
Q3	a.	Explain Token Embeddings and Word Embeddings with suitable examples.	06	L2	CO2
	b.	Describe the architecture and forward pass of a Transformer model.	06	L2	CO2
	c.	Justify the role of positional embeddings and efficient attention mechanisms in improving transformer performance.	08	L3	CO2
OR					
Q4	a.	Explain different sampling and decoding strategies used in transformer-based language models.	06	L2	CO2
	b.	Describe the working of embedding-based recommendation systems with an example.	06	L2	CO2
	c.	Justify how transformer architecture enables parallel token processing and contextual language understanding.	08	L3	CO2
Module – 3					
Q5	a.	Explain the embedding-based text classification pipeline.	06	L2	CO3
	b.	Describe the complete text clustering pipeline using document embeddings.	06	L2	CO3
	c.	Justify the BERTopic framework for topic modelling and compare it with traditional topic modelling approaches.	08	L3	CO3
OR					

Q6	a.	Explain representation models and task-specific models used for text classification.	06	L2	CO3
	b.	Describe the importance of dimensionality reduction before clustering embedding vectors.	06	L2	CO3
	c.	Justify the role of generative models in modern text classification and document understanding tasks.	08	L3	CO3
Module – 4					
Q7	a.	Explain Zero-shot, One-shot and Few-shot prompting with suitable examples.	06	L2	CO4
	b.	Illustrate Chain-of-Thought prompting and Output Verification with examples.	06	L3	CO4
	c.	Justify how LangChain enables the development of intelligent LLM applications using prompt engineering techniques.	08	L3	CO4
OR					
Q8	a.	Explain quantized language models and their advantages.	06	L2	CO4
	b.	Illustrate the Single Prompt Chains and Multiple Prompt Chains in LangChain.	06	L3	CO4
	c.	Justify the role of LLM Memory and LLM Agents in building autonomous AI applications.	08	L3	CO4
Module – 5					
Q9	a.	Explain the architecture and workflow of a Retrieval-Augmented Generation (RAG) system.	06	L2	CO4
	b.	Illustrate the Dense Retrieval, Re-ranking and Retrieval Evaluation Metrics used in semantic search.	06	L3	CO4
	c.	Illustrate how Knowledge Base Integration and Grounded Generation improve the quality and reliability of RAG systems.	08	L2	CO5
OR					
Q10	a.	Explain semantic search using language models.	06	L2	CO4
	b.	Illustrate the evaluation process of Retrieval-Augmented Generation (RAG) systems.	06	L3	CO4
	c.	Illustrate the multimodal embedding models and multimodal text generation with suitable application examples.	08	L2	CO5
