



**Term Evaluation Theory (Even) Semester Regular Examination February 2026**

Roll no.....

Name of the Course: B.TECH (CSE)- CORE, AI-ML, AI-DS

Semester: VI

Name of the Paper: LARGE LANGUAGE MODELS AND GENERATIVE AI

Paper Code: TCS 692

**Time: 1.5 hour**

**Maximum Marks: 50**

**Note:**

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1.

(10 Marks)

- a. Explain the LSTM architecture in detail, including all gates and their functions. Use the example to demonstrate how LSTM handles long-range dependencies. CO02

OR

- b. Compare BERT, GPT, and T5 transformer architectures in terms of their design principles, pretraining objectives, and typical applications with necessary explanations. CO03

Q2.

(10 Marks)

- a. Explain how neural language models overcome the limitations of n-gram models. Include discussion on word embeddings and context window handling. CO02

OR

- b. Compare the training challenges of basic RNNs versus LSTM/GRU models. Discuss how gated architectures mitigate vanishing gradient problems. CO02

Q3.

(10 Marks)

- a. Analyze the practical considerations when choosing between full fine-tuning and PEFT methods for different deployment scenarios. CO04

OR

- b. Explain in detail the concept of scaling laws in LLMs, including the mathematical formulation and what each component represents. CO04

Q4.

(10 Marks)

- a. Explain the complete RLHF pipeline, detailing each of the four stages and their sequential relationship. CO04

OR

- b. Analyze attention mechanisms and their memory/computation impact

CO04

Q5.

(10 Marks)

- a. Describe In-Context Learning (ICL) and explain how it differs from traditional fine-tuning. Compare Zero-Shot, One-Shot, and Few-Shot ICL with examples. CO04

OR

- b. Describe instruction tuning and explain why it is necessary for pretrained language models. Compare instruction tuning with standard pretraining objectives. CO04