



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &  
Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



## **B.E / B.Tech – COMPUTER SCIENCE AND ENGINEERING Academic Year 2025-2026 (Even Semester)**

**Sixth Semester**

**23CSB303 Generative AI**

**QUESTION BANK**

**PART A**

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| 1  | Define Generative AI.   |
| 2  | Differentiate generative and discriminative models.   |
| 3  | State the role of backpropagation in training neural networks.  |
| 4  | What is a Transformer model?  |
| 5  | Outline tokenization and embeddings.  |
| 6  | What is meant by Generative AI, and how is it different from traditional AI systems?                    |
| 7  | State one key difference between Generative models and Discriminative models.                           |
| 8  | What is the role of an activation function in a neural network?   |
| 9  | What is a Diffusion Model in the context of Generative AI?  |
| 10 | Mention any two applications of Large Language Models (LLMs) in industry.                               |
| 11 | Why are embeddings considered a key building block in modern Generative AI systems?                     |
| 12 | State two reasons why Transformers replaced RNNs in large-scale language modeling.                      |
| 13 | What is meant by “hallucination” in Generative AI systems, and why is it considered a risk?             |
| 14 | Identify two differences between diffusion-based image generation and traditional GAN-based approaches. |

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| 15                             | Mention any two practical applications of vision foundation models in real-world systems.   |
| <b><u>PART B(13 MARKS)</u></b> |   |
| 16                             | Explain the evolution of Generative AI. Compare generative and discriminative models with suitable examples.  |
| 17                             | Describe the fundamentals of deep learning including neural networks, backpropagation, and activation functions.  |
| 18                             | Explain Transformer architecture and its role in Large Language Models  |
| 19                             | Discuss language model families such as GPT-series, LLaMA, and Gemini with examples.  |
| 20                             | Describe the evolution of Generative AI from rule-based systems to modern deep learning-based models. Analyze how advances in data, compute, and neural architectures enabled this evolution.   |
| 21                             | Explain the foundations of deep learning with reference to neural networks, backpropagation, and activation functions.<br>Illustrate how these concepts contribute to training Generative AI models.  |
| 22                             | Explain the Transformer architecture and analyze why it is highly effective for Large Language Models.  |
| 23                             | Compare major language model families such as GPT-series, LLaMA, and Gemini in terms of architecture, training scale, and use cases.  |
| 24                             | Compare different language model families such as GPT-series, LLaMA, and Gemini with respect to their training objectives, architectural characteristics, and deployment scenarios. Analyze how these differences influence their practical use in industry applications. |
| 25                             | Analyze the ethical challenges associated with Generative AI systems, focusing on hallucination, bias, and misuse. Explain how technical safeguards and responsible AI practices can reduce these risks.  |
| <b><u>PART B(14 MARKS)</u></b> |   |
| 26                             | An ed-tech company plans to launch an AI-powered content generation platform that can generate lecture notes, quizzes, and summaries using LLMs and diffusion-  |

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|    | <p>based image models.</p> <p>Based on this scenario:</p> <ul style="list-style-type: none"> <li>i) Analyze how Generative AI models are suitable for this application compared to discriminative models</li> <li>ii) Explain the role of Transformers and diffusion models in text and image generation</li> <li>iii) Identify ethical risks and hallucination issues that may arise</li> <li>iv) Propose technical and governance-level mitigation strategies</li> </ul>  |
| 27 | <p>A startup wants to build a multimodal Generative AI system that accepts text prompts and generates both natural language responses and images.</p> <p>Design the system architecture by explaining:</p> <ul style="list-style-type: none"> <li>i) Selection of suitable LLMs and vision foundation models</li> <li>ii) Role of training data and embeddings</li> <li>iii) Challenges related to hallucination, bias, and misuse</li> <li>iv) Strategies to ensure responsible and trustworthy AI deployment.</li> </ul>  |
| 28 | <p>A university plans to deploy a Generative AI-based academic assistant to support students with learning, assignments, and doubt clarification. The system uses Large Language Models trained on large-scale educational data.</p> <ul style="list-style-type: none"> <li>i) Explain how Generative AI differs from traditional discriminative AI in this scenario.</li> <li>ii) Describe the role of neural networks, backpropagation, and activation functions in building such a system.</li> <li>iii) Analyze the ethical risks and hallucination issues that may arise and suggest mitigation strategies.</li> </ul> |
| 29 | <p>A healthcare startup deploys a Generative AI-based virtual assistant to support doctors by summarizing patient records, suggesting possible diagnoses, and generating clinical notes. During pilot usage, doctors observe that the system occasionally produces confident but incorrect medical information, biased recommendations, and unclear sources for its responses. Concerns are also raised about data privacy, patient</p>   |

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|    | <p>safety, and over-reliance on AI-generated outputs.</p> <p>Based on the above case study:</p> <p>i) Identify and explain the ethical issues involved in deploying Generative AI systems in sensitive domains such as healthcare.</p> <p>ii) Analyze the risks associated with hallucinations in Generative AI and explain why such hallucinations occur in Large Language Models.</p> <p>iii) Critically examine the impact of these risks on decision-making, trust, and accountability.</p> <p>iv) Suggest appropriate mitigation strategies to address ethical concerns and reduce hallucinations in Generative AI systems</p> |
| 30 | <p>Analyze the architecture of a multimodal Generative AI system that accepts text prompts and produces both natural language responses and images by examining the selection of appropriate LLMs and vision foundation models, the role of training data and embeddings, the challenges of hallucination, bias, and misuse, and the strategies required for responsible and trustworthy AI deployment.</p>   |