



SRI GNANAMBICA DEGREE COLLEGE, MADANAPALLE (AUTONOMOUS)

PROGRAMME: B.SC. HONOURS IN BIOTECHNOLOGY

(W.E.F. ACADEMIC YEAR 2025 - 26)

FIRST YEAR SECOND SEMESTER



COURSE 1: APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN LIFE SCIENCES

QUESTION BANK

UNIT I - Infrastructure and Platforms for Building Applications using AI

A. Five-Mark Questions

1. Explain the role of RAM and VRAM in AI applications.
2. Write short notes on HDD vs SSD.
3. What are Online AI Platforms? Give two examples.
4. Differentiate between CPU, GPU and TPU
5. Define Edge AI with two examples.

B. Ten-Mark Questions

1. Explain the hardware infrastructure required for AI applications in detail.
2. Compare Online Platforms and Desktop No-Code Platforms for AI development.
3. Explain the concept, advantages, and applications of Edge AI.
4. Describe different processors used in AI and their functions.
5. Discuss the role of memory and storage in AI systems

UNIT II - Foundations of Data - Types, Ethics and Utility in Building Applications using AI

A. Five-Mark Questions

1. Differentiate Data, Information, and Knowledge.
2. Define Structured, Semi-Structured, and Unstructured Data.
3. What is data licensing?
4. Define GDPR and HIPAA (overview).
5. Mention common data formats for text and images.

B. Ten-Mark Questions

1. Explain the importance of data in AI model building.
2. Describe the types and structures of data with examples.
3. Discuss modalities and formats of data in AI.
4. Explain data repositories and licensing issues.
5. Write an essay on Ethics and Privacy in AI Data Usage

UNIT III - The AI Data Pipeline: From Collection to Model Readiness

A. Five-Mark Questions

1. List the stages of the AI data pipeline.
2. What are Missing Values and Duplicates
3. Mention two Data Collection Methods
4. What is Normalization
5. Explain Training Set vs Test Set.

B. Ten-Mark Questions

1. Explain the complete AI Data Pipeline with stages.
2. Discuss various Data Collection Methods for AI.
3. Explain Data Annotation types and importance.
4. Describe Data Cleaning and Pre-processing steps.
5. Explain Data Transformation Techniques in detail.

UNIT IV: AI in Biological Sciences

A. Five-Mark Questions

1. How is AI used to detect plant diseases from images?
2. How does AI help in predicting crop yield?
3. What is precision agriculture? Explain smart irrigation using AI.
4. How is AI used to identify animals in wildlife monitoring?
5. How does AI help in predicting diseases in livestock?

B. Ten-Mark Questions

1. Explain in detail how AI helps in plant disease detection. Describe the steps involved.
2. Discuss how AI predicts crop yield using climate and soil data.
3. Explain the role of AI in wildlife monitoring and environmental protection.
4. Describe how AI helps in forest cover analysis and pollution monitoring.
5. Explain the importance of AI in livestock management and health prediction.

UNIT V: AI in Biotechnology and Biochemistry

A. Five-Mark Questions

1. How is AI used in genome sequencing and gene function prediction?
2. What is AlphaFold? How does AI predict protein structure?
3. How does AI help in drug discovery?
4. How is AI used in microbial classification and metagenomics?
5. How does AI help in predicting chemical reactions?

B. Ten-Mark Questions

1. Explain the role of AI in genome sequencing and gene function analysis.
2. Describe how AI predicts protein structure and why it is important.
3. Discuss the applications of AI in drug discovery in detail.
4. Explain how AI is used in microbial classification and microbiome studies.
5. Describe how AI predicts chemical reactions and material properties.