



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – M.Sc.(MLT)-2024

Course Name – Application of AI in Medical Science

Course Code - MMTC04003

(Semester IV)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Classify AI into categories based on capability.
 - a) Narrow AI, General AI, Super AI
 - b) Logical AI, Analytical AI, Physical AI
 - c) Machine AI, Cognitive AI, Decision AI
 - d) Real-time AI, Theoretical AI, Static AI
- (ii) Identify the type of AI currently in widespread use.
 - a) Narrow AI
 - b) General AI
 - c) Super AI
 - d) Human-level AI
- (iii) Summarize the major difference between General AI and Super AI.
 - a) Super AI surpasses human intelligence, while General AI matches it
 - b) General AI is theoretical, while Super AI is widely implemented
 - c) General AI can operate independently, but Super AI needs human guidance
 - d) Super AI is designed for limited applications, while General AI is unlimited
- (iv) Identify the AI technique commonly used for disease prediction in healthcare.
 - a) Machine Learning
 - b) Cryptography
 - c) Blockchain
 - d) Quantum Computing
- (v) Identify the key factor that improves the accuracy of an AI-based model.
 - a) High-quality training data
 - b) Randomized algorithms
 - c) Frequent model restarts
 - d) Reduced dataset size
- (vi) Explain how unsupervised learning finds patterns in data.
 - a) Identifies structures and relationships without labels
 - b) Maps inputs directly to outputs
 - c) Requires a human to define all possible clusters
 - d) Relies solely on decision trees for classification
- (vii) Choose the primary reason AI is used in robotic-assisted surgeries.
 - a) Increased precision
 - b) Reduced AI adoption

- c) Longer surgery times
 - d) Higher costs
- (viii) Choose the major limitation of AI in future healthcare advancements.
 - a) Ethical and legal concerns
 - b) Higher accuracy
 - c) Faster decision-making
 - d) Lower AI adoption
- (ix) Identify the primary advantage of using AI in remote patient care.
 - a) Real-time monitoring
 - b) Higher hospital costs
 - c) Slower treatment
 - d) Increased waiting times
- (x) Determine the role of AI in optimizing hospital resource management.
 - a) Efficient patient flow
 - b) Increasing costs
 - c) Slower processing
 - d) Reducing medical staff
- (xi) Choose the emerging technology that is enhancing early disease detection in healthcare using AI.
 - a) Blockchain
 - b) Natural Language Processing (NLP)
 - c) Augmented Reality
 - d) Quantum Computing
- (xii) Select the major challenge faced by AI applications in healthcare today.
 - a) Lack of mobile device compatibility
 - b) Limited cloud storage options
 - c) Data privacy and security concerns
 - d) Excessive use of sensors
- (xiii) Choose the correct example of supervised learning.
 - a) Clustering customers
 - b) Dimensionality reduction
 - c) Spam email detection
 - d) Topic modeling
- (xiv) Choose the main difference between supervised and unsupervised learning.
 - a) Labeled output data
 - b) Unlabeled training data
 - c) Amount of input data
 - d) Length of training time
- (xv) Select the NLP technique used in language translation applications.
 - a) Backpropagation
 - b) Convolution
 - c) Tokenization
 - d) Image segmentation

Group-B

(Short Answer Type Questions)

$$3 \times 5 = 15$$

2. Summarize how AI-based models are created and trained to improve decision-making. (3)
3. Explain the significance of entropy and information gain in decision trees. (3)
4. Apply data analysis techniques to process healthcare data effectively. (3)
5. Write about an AI application that supports healthcare decision-making. (3)
6. Conclude the impact of AI on ethical decision-making in industries like finance and healthcare. (3)

OR

Conclude how deep learning models will shape the future of autonomous systems and robotics. (3)

Group-C

(Long Answer Type Questions)

 $5 \times 6 = 30$

7. Apply Python and Pandas to analyze healthcare data and extract meaningful insights for patient care. (5)
8. Illustrate the role of AI in drug discovery and explain how it accelerates the development of new medicines. (5)
9. Evaluate the effectiveness of deep learning models compared to traditional machine learning algorithms in real-world applications. (5)
10. Justify the need for deep learning in complex data analysis compared to traditional statistical methods. (5)

11. Evaluate the significance of NLP in healthcare applications such as medical diagnosis and patient care. (5)
12. Justify the use of AI in personalized medicine and discuss its impact on treatment strategies. (5)

OR

Write an explanation of the ethical challenges in AI-powered healthcare applications and suggest solutions. (5)

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