UNIVERSITY OF CALCUTTA · Previous Year Question Paper

2026

ARTIFICIAL INTELLIGENCE — HONOURS

Paper: SEC-2.2

(Artificial Intelligence)

Full Marks: 50

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The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer *any twenty-five* questions. 2×25

1. Which core field of computer science focuses on building systems that mimic human intelligence and decision-making capabilities?

(A) Artificial Intelligence (B) Database Management Systems
(C) Operating Systems (D) Web Technologies.

2. Deep Learning is considered a specialized subfield of which broader discipline?

(A) Quantum Computing (B) Cyber Security
(C) Machine Learning (D) Computer Hardware.

3. Which scientist proposed the standard test for machine intelligence?

(A) Alan Turing (B) John McCarthy
(C) Marvin Minsky (D) Claude Shannon.

4. Which type of machine learning uses labelled input-output pairs to train algorithms?

(A) Supervised learning (B) Unsupervised learning
(C) Reinforcement learning (D) Evolutionary learning.

5. Finding hidden patterns or grouping unlabelled data into clusters is the primary goal of

(A) supervised learning (B) unsupervised learning
(C) reinforcement learning (D) rule-based learning.

6. Which family of generative AI models relies on two neural networks — a generator and a discriminator — competing against each other?

(A) Support Vector Machines (SVM) (B) Generative Adversarial Networks (GANs)
(C) Decision Trees (D) K-Nearest Neighbors (KNN).

7. Unlike traditional static programming, AI models excel primarily because they

(A) work without any underlying hardware
(B) learn patterns dynamically from data
(C) require no algorithm execution
(D) are limited strictly to local machines.

8. Tasks like object detection, image classification and facial recognition are core applications of :

(A) Natural Language Processing (B) Computer Vision
(C) Expert Systems (D) Database Indexing.

9. Which of the following is a supervised learning algorithm used for both classification and regression tasks?
(A) K-Means (B) Decision Tree
(C) Principal Component Analysis (PCA) (D) Apriori Algorithm.

10. Machine translation, text summarization and named entity recognition belong to which AI domain?
(A) Computer Vision (B) Natural Language Processing (NLP)
(C) Robotics and Kinematics (D) Signal Processing.

11. Designing AI models that prioritize fairness, accountability and transparency is known as
(A) Responsible / Ethical AI (B) Model Compression
(C) Hyperparameter Tuning (D) High-Performance Computing.

12. Knowledge in AI can be represented as
(A) Predicate logic (B) Propositional logic
(C) Both (A) and (B) (D) None of these.

13. In reinforcement learning, the system learns optimal actions through trial-and-error by receiving
(A) static database tables (B) labelled true / false target values
(C) rewards and penalties (D) pre-compiled source code.

14. A model designed to predict binary outcomes, such as identifying whether a transaction is 'fraudulent' or 'legitimate', is a
(A) Classification model (B) Regression model
(C) Clustering model (D) Dimensionality reduction model.

15. Which neural network architecture uses recurrent feedback connections to handle sequential time-series data?
(A) Recurrent Neural Network (RNN) (B) Convolutional Neural Network (CNN)
(C) Support Vector Machine (SVM) (D) Feedforward Perceptron.

16. Conversational agents and chatbots leverage NLP primarily to
(A) process video frame streams
(B) understand context and interact with users in natural language
(C) scan physical documents manually
(D) drive autonomous hardware motors.

17. Systematic errors and unfair outputs in AI decision-making are primarily caused by
(A) overpowered system graphics processors
(B) biased or non-representative training datasets
(C) fast network interconnectivity
(D) using open-source software.

18. AI deployment can violate individual privacy primarily through
(A) unauthorized collection and profiling of personal data
(B) strong data encryption methods
(C) clearing temporary cache memory
(D) automated software patches.

19. Algorithmic bias in automated recruitment systems can lead to
(A) reduced system processing times
(B) unfair rejection of qualified candidate demographics
(C) enhanced server memory capacity
(D) automatic code documentation.

20. Estimating the future market value of a house based on area, bedrooms and location is a classic example of a
(A) Classification task
(B) Regression task
(C) Clustering task
(D) Association rule task.

21. What artificial unit serves as the fundamental building block of deep neural networks?
(A) Logic Gate
(B) Perceptron / Artificial Neuron
(C) Memory Bus
(D) Relational Node.

22. Grouping e-commerce customers into distinct segments based on purchase behavior without prior category labels is
(A) Supervised Classification
(B) Unsupervised Clustering
(C) Reinforcement Learning
(D) Time-series Forecasting.

23. AI models analyze medical imaging (such as CT scans and X-rays) primarily to help clinicians
(A) print patient billing statements
(B) detect early structural abnormalities or tumors
(C) transport medical supplies physically
(D) schedule daily shift rosters.

24. In AI search strategies, the complete collection of all possible states reachable from the initial state is called the
(A) State Space
(B) Knowledge Base
(C) Inference Engine
(D) Decision Table.

25. In financial institutions, machine learning algorithms are extensively applied to
(A) organize physical paper files
(B) detect anomalous and fraudulent credit card transactions
(C) clean office workspace facilities
(D) manage cafeteria meal menus.

26. How can AI help in early disease detection?

(A) By analyzing patient data and identifying patterns
(B) By increasing hospital electricity consumption
(C) By replacing medical equipment
(D) By preventing patients from visiting doctors.

27. How can AI improve traffic management?
(A) By analyzing traffic condition and optimizing signal operations
(B) By increasing unnecessary traffic
(C) By removing all traffic signals
(D) By preventing vehicles from communicating.

28. In weather forecasting, machine learning models are applied to
(A) process satellite and atmospheric data to predict extreme weather events
(B) control atmospheric temperature directly
(C) measure rain volume manually using gauges
(D) prevent natural disasters physically.

29. In education technology (EdTech), AI applications serve students by
(A) generating personalized learning pathways based on individual performance
(B) building physical classroom furniture
(C) ringing school bell timers
(D) printing physical textbooks.

30. What is a primary concern regarding the impact of AI automation on the workforce?
(A) Complete elimination of electricity usage.
(B) Displacement of routine manual and cognitive jobs alongside a need for workforce reskilling.
(C) Permanent reduction in computer processing power.
(D) Unlimited increase in server storage limits.

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