A. Short Type Answers

Q1. Give an application of computer vision in AI.

Ans - Computer vision in AI enables machines to interpret and analyze visual data from the world. One key application is in autonomous vehicles, where AI uses cameras and sensors to detect objects, recognize traffic signs, and navigate safely. This enhances road safety, reduces human error, and supports the development of self-driving technology, making transportation more efficient and intelligent.

Q2. Name any three areas where AI has made a remarkable impact.

Ans - Three areas where AI has made a remarkable impact are:

1. **Healthcare** – AI assists in disease diagnosis, personalized treatment, and medical imaging analysis.
2. **Finance** – AI powers fraud detection, algorithmic trading, and customer service chatbots.
3. **Transportation** – AI drives innovations in autonomous vehicles, route optimization, and traffic management.

Q3. Explain in short, how AI can be the future of mankind?

Ans - AI can be the future of mankind by revolutionizing how we live and work. It can automate tasks, enhance decision-making, improve healthcare, personalize education, and drive innovation across industries. By handling complex problems efficiently, AI can boost productivity, save lives, and create smarter societies—ultimately shaping a future where technology augments human potential and improves quality of life.

Q4. Explain the concept of Data Statistics as a domain of AI.

Ans - Data Statistics, as a domain of AI, involves collecting, analyzing, interpreting, and presenting data to uncover patterns and insights. It forms the foundation for AI algorithms by helping machines learn from data through techniques like probability,

regression, and hypothesis testing. These statistical methods enable AI systems to make predictions, detect trends, and improve decision-making with accuracy and reliability.

Q5. What is the main goal of creating a confusion matrix?

Ans - The main goal of creating a **confusion matrix** is to evaluate the performance of a classification model. It helps visualize how well the model is predicting actual classes by showing the number of correct and incorrect predictions. The matrix provides detailed insights into **True Positives, True Negatives, False Positives**, and **False Negatives**, which are essential for measuring accuracy, precision, recall, and F1-score.

Q6. What is a leaf node in decision tree?

Ans - A node that does not split further.

Q7. Explain in short the concept of Data Acquisition.

Ans - Data acquisition in AI refers to the process of collecting and gathering raw data from various sources such as sensors, databases, surveys, or the internet. This data serves as the foundation for training AI models. Accurate and high-quality data acquisition is crucial, as it directly affects the performance, learning ability, and reliability of AI systems.

Q8. What are the Difference between Weak AI and Narrow AI?

Ans - Weak AI refers to AI systems designed for specific tasks without true understanding or consciousness. They simulate intelligence but don't possess real thinking capabilities.

Narrow AI is a type of Weak AI that excels at performing a single task (e.g., facial recognition or language translation) but cannot perform tasks outside its domain.

In short, **Narrow AI is a subset of Weak AI**, focused on specialized functions.

Q9. Explain the AI research in natural language and understanding.

Ans - AI research in **Natural Language Understanding (NLU)** works on helping computers understand human language. The goal is to make machines read, listen, and respond in a way that makes sense to people. It includes tasks like **translating languages, answering questions, or finding emotions in text**.

Q10. How can AI be helpful in Space Exploration?

Ans - AI can be very helpful in space exploration by making missions smarter and safer. It can help in navigating spacecraft, analyzing data from planets and stars, detecting system failures, and controlling robots on distant planets.

Q11. How can AI lead to Unemployment?

Ans - AI can lead to unemployment when machines and software take over tasks that were previously done by humans. For instance jobs that involve **repetitive or routine work**, like data entry, manufacturing, etc.

Q12. AI proves to be boon for repetitive tasks. Explain.

Ans - AI is a boon for repetitive tasks because it can perform them **faster, more accurately, and without getting tired**. Tasks like **data entry, sorting emails, manufacturing line work, or scheduling** can be automated using AI. This saves time, reduces human error, and allows people to focus on more creative or complex work.

B. Long Type Answers

Q1. How is artificial general Intelligence different from artificial super intelligence ?

Ans -

Artificial general Intelligence VS Artificial super intelligence

- **Artificial General Intelligence** refers to AI that can perform any intellectual task that a human can, with the ability to learn, reason, and adapt across different domains. It's like a human-level intelligent machine.
- **Artificial Super Intelligence** goes beyond human intelligence. It would surpass human abilities in all aspects—creativity, problem-solving, decision-making, and even emotional intelligence

Q2. Explain any three important careers in AI.

Ans - **Machine Learning Engineer –** They build algorithms that allow machines to learn from data and improve over time. It's a key role in developing AI applications.

Data Scientist – They analyze large sets of data to find patterns and insights, helping train AI models and guide decision-making.

AI Research Scientist – They work on advancing the field of AI by creating new models, techniques, and theories to solve complex problems.

Q3. What are the disadvantages of AI?

Ans - Expensive Technology - hardware and softwares needs to be upgraded with time to meet the latest requirement.

Leads to Unemployment - With rapid development of AI, the fear of unemployment is constant.

Discouraging Human Creativity - AI like ChatGPT and Grok AI can be used with ease to do anything and everything.

Q4. Why is Computer Vision an important domain of AI?

Ans - Computer Vision is an important domain of AI because it enables machines to see, understand, and interpret visual information like humans. It allows AI systems to analyze images and videos for tasks such as facial recognition, medical imaging, object detection, and self-driving cars. This makes it useful in areas like healthcare, security, transportation, and manufacturing, improving accuracy and automation.

Q5. Give any three important applications of AI in real life.

Ans - 1. Virtual Assistants – AI powers tools like Siri, Alexa, and Google Assistant to help with tasks like setting reminders, answering questions, or playing music.

2. **Healthcare Diagnosis** – AI helps doctors by **analysing medical images**, predicting diseases, and suggesting treatments faster and more accurately.

3. **Fraud Detection** – In banking, AI detects **suspicious transactions** and prevents fraud by identifying unusual spending patterns in real-time.

Q6. How is AI of great help in email communication?

Ans - 1. **Spam Filtering** – AI detects and blocks unwanted or harmful emails.

2. **Smart Replies** – It suggests quick, relevant responses to emails.

3. **Email Sorting** – AI organizes emails into categories like primary, social, or promotions, making inboxes easier to manage.

Q7. List down the three most important jobs at risk due to AI.

Ans - Manufacturing, Hospitality, Food Service.

Q8. Explain any two sources of AI Bias.

Ans - 1. Biased Training Data – If the data used to train an AI system contains prejudiced or unbalanced information, the AI will learn and reflect those same biases. For example, if a hiring algorithm is trained mostly on male resumes, it may unfairly favor male candidates.

2. Human Bias in Programming – AI systems are created by humans, and unconscious biases of developers can influence how the system is designed, which features are used, or how outcomes are evaluated—leading to biased decisions

Q9. What are the principles of AI ethics?

Ans - 1. Fairness – AI should treat all individuals equally, avoiding bias and discrimination.

2. Transparency – AI systems should be understandable and explainable to users.

3. Privacy – AI must protect users' personal data and ensure confidentiality.

Q10. List down the difference between ethics and morals.

Ans -

Aspects	Ethics	Morals
Definition	Rules provided by an External Source	Principles regarding right and wrong held by an individual.
Objective	Maintain order and fairness in a society	Foster personal Integrity and align with personal values
Examples	Medical ethics, business ethics, legal ethics	Personal beliefs about honesty, integrity and kindness

***Foster - encourage the development of.....**