

**B. K. BIRLA CENTRE FOR EDUCATION, PUNE**

(SENIOR SECONDARY CO-ED DAY CUM RESIDENTIAL SCHOOL, AFFILIATED TO CBSE NEW DELHI)

MID TERM EXAM (2024-25)**ARTIFICIAL INTELLIGENCE****Class : VII****Date :****MARKING SCHEME****Duration : 2 Hours****Max. Marks : 50****A. Multiple Choice Question.(Answer any 12 of 15)****12x1=12 Marks**

- What are a type of robot which use treads or caterpillar tracks instead of wheels?
a. Legged robot b. Hilly robot **c. Tracked robot** d. Bio inspired robot
- An.....robot is a system cable of sustained flight with no direct human control and able to perform a specific task.
a. Ground robot **b. aerial robot** c. underwater robot d. Land robot
- Which of the following robot refers to aerial vehicle that receives remote commands from a pilot or relies of software for autonomous flight.
a. Flight b. aerial robot **c. drone** d. airplane
-are a type of mobile robot which use articulated limbs, such as leg mechanisms to provide locomotion.
a. Legged robot b. Hilly robot c. Tracked robot d. Bio inspired robot
- Anis a robot that travels underwater without requiring continuous input from an operator.
a. Unmanned water vehicle
b. Unmanned ground vehicle
c. Unmanned underwater vehicle
d. Autonomous underwater vehicle
- In 1921, the word 'Robot' was first used by.....
a. Karel kapec b. James Maxwell c. Peter Corke d. C F Gauss
- Sophia a humanoid robot dubbed the first.....is created by Hanson Robotics.
a. Robot alien b. Robot writer c. Robot artist **d. Robot citizen**
- Which of the following is the first robot to use AI?
a. Sophia b. ASIMO **c. Shakey** d. Vayuputra
- To be called a robot, a system should be able to doof the following.
a. Move around
b. Sense the environment
c. Display Intelligent behaviour
d. All of the above
- In 1942, the word 'Robotics' was used by the science fiction writer.....
a. Daniel Adams
b. Edwin Abott
c. Isaac Asimov
d. Alan Burt Akens
- With what segment of human endeavour is the term "Video Assistance Referring" related?

- a. Education **b. Sports** c. Agriculture d. law enforcement
12. Which technology allows us to try on dresses without actually putting them on?
- a. Fashion technology
b. Fashion mirror technology
c. Dress technology
d. Rapid technology
13. Which of the following is a humanoid robot that talks, moves and teaches children everything from literacy to computer programming.
- a. Cram 101 b. Penny **c. Nao** d. Sophia
14. Which of the following app is used to turn any textbook into a smart study guide.
- a. Cram001 b. Cram002 **c. Cram101** d. Cram 102
15.is working on a robotic unit, called DRU, which will deliver foods and drinks via the best optimized path.
- a. Amazon b. Flipkat c. Bigbasket **d. Dominos**

B. Fill in the blanks.(Answer any 12 of 15)

12x1=12 Marks

16. The standard of behaviour our society accepts is called...**Ethics**
17. Deep Fake are.....**AI**.....generated video or audio content with an intent or device.
18. An Uber ...**Self Driving**....SUV struck and killed a female pedestrian in Tempe, Arizona.
19. The acronym of “Tay” is ...**Thinking About You**
20. In June 2005, a ...**surgical robot**..at a hospital in Philadelphia malfunctioned during prostate surgery.
- 21. ...Presentation Translator**...is a free PowerPoint plug-in that develops subtitles in real time of what the teacher is saying.
22. **Penny**....is a robot server created by Bear Robotics that can assist human servers, using sensors to navigate crowded restaurants.
23. ...**Autonomous Rail rapid Transit**.is the full form of “ART”
24. Full form of ‘BARC’ is ...**Broadcast Audience Research Council**..
25. Farmers in...**Uganda**..have mobile –phone based tools to track the images of crops and their infections.
26. People who are strong in **linguistic**..intelligence are able to use words well, both when writing and speaking.
27. According to Gardner, individuals who are high in ...**naturalistic**..intelligence are more in tune with nature.
28. John McCarthy is the father of...**AI**.
29. Those who have high ...**kinesthetic**....intelligence are said to be good at body movement, performing actions, and physical control.
30. Human Intelligence has a high error rate compared to an ..**Human Intelligene**..system.

C. Short Answer Type Questions.(Answer any 7 of 10)

7 x 2=14 Marks

31. Expand any two the following short forms.
- a. AUV b. ASW c. UUV

Ans- **AUV** - Autonomous Underwater Vehicle

ASW - Anti-Submarine Warfare

UUV-Unman Undersea Vehicle

32. Describe the various types of land based robots.

Ans-wheeled Robots

Tracked Robots

Legged Robots

33. Define Robotics.

Ans-It is a field of engineering that deals with the creation, design, production and use of robots.

34. Explain the three laws of Robotics.

Ans-First Law. Robot may not injure a human being.

Second Law. A robot must obey the order given by human being.

Third Law. A robot must protect its own existence

35. Give any three examples of AI usages in sports.

Ans- Player Performance Analysis:

Injury Prevention and Rehabilitation

Game Strategy and Tactics:

Facial recognition

Crowd management

Smart ticketing

36. Describe the robot Nao, a humanoid robot.

Ans- Nao is equipped with a range of sensors and actuators that enable it to interact with its environment and perform various tasks. It can walk, talk, recognize faces and voices, and perform gestures. Nao is programmed to engage in activities such as dancing, playing games, and even teaching basic concepts. Its movements and actions are controlled by a combination of pre-defined routines and real-time responses to its environment.

37. Define Ethics. Why Ethics are important in our life.

Ans- **Ethics** refers to the branch of philosophy that deals with questions about what is morally right and wrong, good and bad, fair and unfair. It involves the study of principles and values that guide human behavior and decision-making. Ethics provides frameworks for assessing how individuals should act and interact with others in various contexts, such as personal life, professional conduct, and societal roles.

Importance of Ethics in Our Lives:

Building Trust

Promoting fairness

Maintaining social order

38. Why did the AI Chat bot by Microsoft close down after some hours of operation?

Ans- The AI chatbot by Microsoft, known as Tay, was taken offline shortly after its launch in March 2016 due to a series of issues that emerged quickly.

Malicious Manipulation: Tay was designed to engage in conversations with users on Twitter and learn from those interactions to improve its responses.

However, users quickly began to exploit the chatbot by feeding it offensive and inappropriate content. As a result, Tay started generating and posting problematic and offensive tweets, which went against its intended purpose.

39. Who is known as the father of AI? What was the definition given by this person?

Ans- **John McCarthy** is widely recognized as the "father of AI" for his pioneering work in the field of artificial intelligence. He was a computer scientist and cognitive scientist who coined the term "artificial intelligence" in 1955.

Definition of AI by John McCarthy:

"Every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it."

40. What do you mean by Turing Test? Explain the term.

Ans- The **Turing Test** is a concept proposed by the British mathematician and computer scientist **Alan Turing** in 1950 as a way to evaluate a machine's ability to exhibit intelligent behavior that is indistinguishable from that of a human.

Key Aspects of the Turing Test:

Assessment of Intelligence

Imitation Game

D. Long Answer Type Questions (Answer any 4 of 8)

4 x 3=12 Marks

41. Define intelligence and explain the various types of intelligence.

Ans- **Intelligence** is broadly defined as the ability to acquire, understand, and apply knowledge and skills. It involves various cognitive processes such as problem-solving, reasoning, learning, and adapting to new situations

Multiple Intelligences:

- Linguistic Intelligence: The ability to use language effectively, including reading, writing, and verbal communication.
- Logical-Mathematical Intelligence: The capacity for logical reasoning, problem-solving, and understanding mathematical concepts.
- Spatial Intelligence: The ability to visualize and manipulate objects and spatial relations.
- Musical Intelligence: Sensitivity to rhythm, pitch, melody, and sound.
- Bodily-Kinesthetic Intelligence: The ability to use one's body effectively for physical tasks and coordination.
- Interpersonal Intelligence: The ability to understand and interact effectively with others.
- Intrapersonal Intelligence: Self-awareness and the ability to understand one's own emotions and motivations.
- Naturalistic Intelligence: The capacity to recognize and categorize natural objects and phenomena.

42. Write two advantages and disadvantages of Artificial Intelligence.

Ans- **Advantages of Artificial Intelligence (AI):**

Increased Efficiency and Productivity: AI can automate repetitive and mundane tasks, significantly increasing efficiency and productivity in various industries.

For example, in manufacturing, AI-driven robots can perform complex assembly tasks faster and with greater precision than human workers, leading to higher production rates and reduced costs.

Enhanced Decision-Making: AI systems can analyze large datasets and provide valuable insights that assist in making more informed decisions. Machine learning models can predict trends, optimize processes, and support strategic planning based on data-driven analysis.

Disadvantages of Artificial Intelligence (AI):

Job Displacement: The automation of tasks and processes through AI can lead to job displacement as machines and algorithms replace human workers in certain roles. This can result in unemployment and require significant efforts in reskilling and retraining the workforce.

Ethical and Privacy Concerns: The use of AI raises ethical and privacy concerns, such as the potential for biased decision-making and the misuse of personal data. AI systems can inadvertently perpetuate existing biases if they are trained on biased data, leading to unfair or discriminatory outcomes.

43. Discuss the use of AI in the field of : (a) Transport (b) Literature

Ans- (a) In Transport

Autonomous Vehicles: AI is a cornerstone of self-driving technology, enabling vehicles to navigate, make decisions, and respond to their environment without human intervention. AI systems use a combination of sensors (e.g., cameras, LiDAR), machine learning algorithms, and real-time data processing to understand road conditions, detect obstacles, and follow traffic rules.

(b) In Literature

Text Generation and Creative Writing: AI models like GPT-3 (and its successors) can generate human-like text based on prompts given by users. These models can assist writers by providing suggestions, generating content, and even composing entire passages of text. They can be used for various literary tasks, including story creation, poetry generation, and dialogue writing.

44. A hospital shares the details of the patients with an insurance company. Answer from the Ethical as well as Unethical point of view.

Ans- Ethical Perspective:

Patient Consent: If the hospital has obtained informed consent from the patients, explaining how their data will be used and ensuring that patients agree to share their information with the insurance company, it is generally considered ethical.

Unethical Perspective:

Data Breaches: If patient information is not adequately protected during the transfer to the insurance company, leading to potential data breaches or unauthorized access, it is considered unethical.

Privacy Violations: Sharing sensitive health information without proper safeguards can lead to privacy violations, affecting patients' trust in the healthcare system.

45. Give any three examples of chat bot where chat bot gone wrong.

Ans- Microsoft's Tay-In 2016, Microsoft released Tay, a chatbot designed to interact with users on Twitter and learn from those interactions. However, within hours of its launch, Tay began generating offensive and inappropriate tweets.

Google's Duplex-Google Duplex, an AI-powered chatbot designed to make phone calls and book appointments on behalf of users, faced controversy over its realistic voice and conversational abilities

46. Write the short notes on the following: (a) Cram101 apps (b) DRU Robots

Ans-(a) Cram101 is a platform that offers digital study aids, including apps designed to help students study and retain information more effectively. The core of Cram101's offerings is its "Textbook Summaries" and "Study Guides" apps, which provide condensed versions of academic textbooks and structured review materials.

(b) DRU Robots is a company known for developing autonomous delivery robots designed for use in various settings, such as campuses, urban areas, and businesses. These robots are designed to deliver goods and provide services with minimal human intervention.

47. Describe the various generations of Robots with appropriate example.

Ans- First Generation: Basic Robots (1950s-1960s)- Simple Mechanisms: These robots were primarily mechanical with basic, pre-programmed functions.

Second Generation: Programmable Robots (1970s-1980s)- Basic sensors were introduced, improving the robots' ability to interact with their environment.

Third Generation: Intelligent Robots (1990s-2000s)- Advanced Sensing and Actuation: Robots began incorporating more sophisticated sensors and actuators, enabling better interaction with their environment.

Fourth Generation: Autonomous Robots (2000s-2010s)- Autonomy and Adaptability: These robots are capable of operating independently in complex environments. They use advanced AI algorithms and machine learning to adapt to new situations.

Fifth Generation: Cognitive and Collaborative Robots (2010s-Present)- Cognitive Capabilities: These robots have advanced cognitive functions, including the ability to learn from experience, understand natural language, and make complex decisions.

Human-Robot Collaboration: They are designed to work alongside humans in a collaborative manner, enhancing productivity and safety.

Examples:

Sophie (by SoftBank Robotics): A humanoid robot that can engage in natural conversations with people using advanced AI and natural language processing. Sophie is used in customer service and social interaction roles.

ASIMO (by Honda): An updated version of Honda's earlier humanoid robot, ASIMO now features advanced cognitive abilities and can perform a wide range of tasks while interacting with people.

Emerging Generation: Autonomous and AI-Driven Robots (Future)-

Deep Learning and Advanced AI: Future robots are expected to leverage deep learning and advanced AI to handle even more complex tasks and interact more naturally with humans.

Integration with IoT: These robots will likely be integrated with the Internet of Things (IoT) for better data sharing and coordination.

48. Differentiate between manual and autonomous robot.

Ans- Manual robots are robots that require human intervention to operate. They are controlled directly by humans through manual input, often using remote controls or specific programming commands.

Human Control: Manual robots are operated using direct human control. Operators provide instructions through physical interfaces, joysticks, or computers.

Autonomous Robots- Autonomous robots operate independently and can perform tasks without ongoing human intervention. They use sensors, algorithms, and artificial intelligence to perceive their environment and make decisions based on that data.

Self-Guided Operation: Autonomous robots are capable of navigating and performing tasks on their own, using sensors and AI to interpret their surroundings and make decisions.
