Name: Omkar Sawant
TE COMP A 65

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Formative Assesment - I

1] Definitions of AI :-

(i) A branch of computer science dealing with the simulation of intelligent behaviour in computers.

(ii) The capability of machine to imitate intelligent human behaviour.

(iii) The theory and development of computer systems able to perform tasks normally requiring human intelligence such as visual perception, speech recognition, decision making & translation between languages.

(iv) Field of computer science dedicated to solving cognitive problems commonly associated with human intelligence such as learning, problem solving & pattern recognization

(v) Stimulation of human intelligence in machines that are programmed to think like humans and mimic their actions.

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2] a] Thinking Humanly

- efforts to make computers thinks in true & literal sense.
- automations of activities that we associate with human beings, problems solving, learning.

b] Acting Humanly

- Art of creating machines that perform functions that require intelligence when performed by people.
- Study of how to make computers do things at which at the moment people are better

Thinking Rationally

- Study of mental faculties through the use of computational models.
- Study of computation that makes it possible to perceive, reason & act.

Acting Rationally

- Computational intelligence is the study of the design of intelligent agents.
- Artificial intelligence is concerned with intelligent behaviour in artifacts.

3] Deductive & Inductive Reasing →

(i) Inductive Reasoning

- Conducts specific observations to make broad general statements.

eg ; Omkar is a student, Omkar is sincere. Therefore all students are sincere.

(ii) Deductive Reasoning

- It starts with a general statement & combines the possibilities to reach a specific logical conclusion

eg ; All youngsters like to party. Omkar is a youngster. Therefore he also parties.

5]

Human Intelligence	Artificial Intelligence
• Process information slower	• Process information faster
• Maybe subjective	• Highly objective
• Can't easily multitask	• Can multi task so well
• Ability to demonstrate their intelligence by communicating effectively.	• capture and preserve human expertise.
• Flexible reasoning & critical thinking	• Fast response, the ability to comprehend large amounts of data quickly.

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4] Intelligent systems are technologically advanced machines that and respond to the world around them. The field of intelligent systems also focuses on how these systems interact with human users in changing and dynamic physical and social environments.

Pre-requisite →

Before learning about Artificial Intelligence, you must have the fundamental knowledge so following that you the concepts only:

- Any computer language such as C, C++, Java, Python etc.
- Knowledge of essential Mathematics such as derivatives probability theory etc.
- Basic knowledge of data structures and algorithms.

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6] Application in AI →

(i) AI in gaming :

- Used for gaming purpose.
- AI machines play strategic games like chess, where the machine needs to think of large no. of possible places.

(ii) AI in education :

- Automate grading
- AI chatbot for communication
- Can work as personal private or virtual tutor for student.

(iii) AI in e-commerce :

- Recommends shopper related items.

(iv) AI in agriculture :

- Agriculture is becoming digital.
- Using agriculture robotics, soil & crop monitoring.

(v) AI in Entertainment :

- AI in entertainment services like netflix or amazon.
- The recommend shows or programs & shows

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7] Tabulate detailed evolution of Intelligent System.

Year	Description
1943	Evolution of Artificial neurons
1950	Turing machine
1956	Birth of AI : Dartmouth conference
1966	First chatbot : Eliza
1972	First intelligence robot : WABOT 1
1974 - 1980	First AI winner
1980	Expert Systems
1987 - 1993	Second AI winner
1997	IBM : Deep Blue - first computer to beat a world champion
2002	AI in Home : Roomba
2011	IBM's Watson : Wins a quiz show
2012	Google now.
2014	Chatbot Eugene
2015	Amazon Echo

8] Discuss various foundation with AI in detail

→
- Philosophy : Logic, methods of reasoning, mind as physical system, foundations of learning language, rationality.
- Mathematics : Formal representation and proof, algorithm, computation, (un) decidability, (in) tractability.
- Probability / Statistics : modelling uncertainty, learning from data.
- Economics : utility, decision theory, rational economic agents.
- Neuroscience : neurons as information processing units.
- Psychology : how do people behave, perceive, process cognitive information, represent knowledge.
- Computer Engineering : building fast computers
- Control theory : design systems that maximize as objective function over time.
- Linguistics : knowledge representation, grammars.

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9] Give an overview for various component of Intelligent System with brief discussion.

→ Components are as follows:

1. Reasoning
2. Learning
3. Perception
4. Problem solving
5. Linguistic intelligence.

1. Reasoning : It is the set of process that enables us to provide basis for judgement, making decisions, and prediction. There are broadly two types.

Inductive Reasoning :- It conduct a specific observations to make general broad statements.

Deductive Reasoning - It starts with a general statement & examines the possibilities to reach a specific, logical conclusion.

2. Learning : It is the activity of gaining knowledge or skill by studying, practicing, being taught or experience something.

1. Audiory learning - By listening & hearing
2. Motor learning - By precise movement of muscles.
3. Spatial learning - Watching & imitating it

10] Describe various categories of intelligent systems and tasks.

→ AI can be categorized as

(i) Type - I
- Narrow AI
- General AI
- Strong AI

(ii) Type - II
- Reactive Machines
- Limited Memory
- Theory of mind
- Self Awareness.

- Narrow AI is a type of AI which is able to perform a dedicated task with intelligence.
- General AI is a type of intelligence which could perform any intellectual task with efficiency like a human.
- Super AI is a level of intelligence of systems at which machines could surpass human intelligence.

1] Reactive machines - Purely reactive machines are the most basic types of AI.

2] Theory of mind - Theory of Mind AI should understand the human emotions, people, beliefs and be able to interact socially like humans.