# ARTIFICIAL INTELLIGENCE NOTES:

**1)What is artificial intelligence?**

**Definition:** Artificial Intelligence (AI) is the branch of computer science that focuses on creating machines or software that can think, learn, and make decisions like humans.

**2)Difference between normal machine and AI machine?**

**NORMAL MACHINES:**

* Work only for the specific task they are built for.

* They cannot think or learn or make decisions.

* Always do the same task in the same way.

* *Example*: A washing machine can only wash clothes it won't learn to fold them.

**AI MACHINES:**

* Can learn from data and experience.

*They make decisions, solve problems, and improve performance over time.

* can adapt to new situations>

*Example:* **Self-driving cars** (they sense roads, traffic, and drive automatically)

**3) Different types of Artificial intelligence?**

## Types of AI:

1. **Narrow AI:** AI that can do only one specific task.
   *Example:* siri, Google Translate.

2. **General AI:** AI that can think, learn and perform any task like a human.
   *Example:* Still not built fully An AI that can study math, play music, cook food and also chat like a human all with the same system

3. **Super AI:** AI that is smarter than humans in every field and can make its own decisions.
   *Example:* This is still theoretical not yet created. If built it could perform tasks better than the best human experts.

**4) About Important parts in the AI machines.**

1) **Sensors**: They collect information from the environment so that AI can understand what is happening. Sensor detects things like light, sound, temperature, movement, touch, or distance.

   *Example:* **Camera / Vision Sensor:** Captures images or video (used in self-driving cars, face recognition).

   **Microphone**: Picks up sound or voice commands (Alexa, Siri).

   **Infrared / LIDAR / Radar:** Measures distance, detects obstacles (robots, autonomous vehicles).

   **Temperature Sensor:** Checks heat or cold (smart ACs, industrial AI).

   **Touch/Pressure Sensor:** Senses touch or force (robotic arms, smartphones).

   \* Sensor convert real-world signals (light, sound, heat) into digital data for the AI to process.

2) **Actuators**: They carry out actions based on AI's decisions and converts the AI's digital commands into physical movement or changes.

   *Examples:* **Motors / Wheels:** Move a robot or vehicle.

   **Arm Actuators:** Pick, place, or assemble parts in factories.

   **Speakers:** Deliver voice responses.

   **Servo Motors / Hydraulic Pistons:** Precise movements for machines and drones.

   \* Actuators receive control signals from the AI system and produce a physical effect ( moton, sound, vibration, etc.)

**5) Applications of Artificial intelligence?**

**1. Virtual Assistants**

- **Definition:** AI that listens to your voice and helps you with tasks.
- **Examples:** Siri, Alexa, Google Assistant.
- **Use:** Answer questions, play music, set alarms.

**2. Healthcare**

- **Definition:** AI that helps doctors detect diseases and suggest treatments.
- **Examples:** AI scans X-rays, predicts illnesses.
- **Use:** Faster diagnosis, better patient care.

**3. Self-Driving Cars**

- **Definition:** Cars that use AI to see the road, follow traffic rules, and drive safely.
- **Examples:** Tesla Autopilot, Waymo.
- **Use:** Reduce accidents and help people travel.

**4. Banking & Finance**

- **Definition:** AI that finds fraud and manages money decisions.
- **Examples:** Fraud detection, chatbots in banks.
- **Use:** Safer transactions, 24/7 customer help.

**5. Shopping & E-Commerce**

- **Definition:** AI that shows products you may like.
- **Examples:** Amazon recommendations, Flipkart suggestions.
- **Use:** Personal shopping experience.

**6. Education**

- **Definition:** AI tools that teach and guide students.
- **Examples:** Online tutors, automatic grading.
- **Use:** Personalized learning.

**7. Agriculture**

- **Definition:** AI that checks crops, soil, and weather to help farmers.
- **Examples:** Drones for crop health.
- **Use:** Better harvest and less waste.

**8. Entertainment**

- **Definition:** AI that creates or recommends music, movies, and games.

- **Examples:** Netflix suggestions, game bots.
- **Use:** More fun and interesting content.

## 9. Security & Surveillance

- **Definition:** AI cameras that watch and detect unusual activities.
- **Use:** Improve safety in public places.