**1: Is AI a science, or is it engineering ?**

AI is **a branch of computer science** and is concerned with the construction and deployment of intelligent agents as computer programs and with understanding the behavior of these artifacts.

**2: To what extent are the following computer systems instances of artificial intelligence ?**

**a: supermarket barcode scanners**

**b: web search engine**

**c: Voice-activated telephone menus**

**d: Internet routing algorithms that respond dynamically to the state of the network**

**A> supermarket barcode scanners :** A barcode scanner gathers product information by scanning a striped code usually located on the back of a product.

**B**> web search engine is a software application which crawls the web to index it and provides the information based on the user search query. Some search engines go beyond that and also extract information from various open databases.

**C>** Voice-activated telephone menus. **Internet routing algorithms that respond dynamically to the state of the network**.

**D>** Internet routing algorithms that respond dynamically to the state of the network **respond on their own to what's happening in their environment**. If there is too much traffic, it can decided whether or not to open up more space. Internet Routing Algorithms know what ports are accessible and which ones are not.

**3: Define in your own words:**

**a: Intelligence**

**b: Artificial intelligence**

**c: Agent**

**d:Rationality**

**e: Logical reasoning**

1. **the capacity for abstraction, logic, understanding, self-awareness, learning, emotional knowledge.**
2. the ability of a digital [computer](https://www.britannica.com/technology/computer) or computer-controlled [robot](https://www.britannica.com/technology/robot-technology) to perform tasks commonly associated with intelligent beings.
3. An agent, in legal terminology, is a person who has been legally empowered to act on behalf of another person or an entity. An agent may be employed to represent a client in negotiations and other dealings with third parties. The agent may be given decision-making authority.

D> Rationality means that **an AI agent is assumed to take account of available information and uncertainty, potential costs and benefits, and to act consistently (logically) in choosing the best action.**

E> Logical reasoning is **when the artificial intelligence processes strict rules of logic**. Instead of the flexible intelligence of humans, this is the direct analysis of logical connections, such as if-then statements.

4: List all the fields of AL and explain?

\* 1>Machine learning: Machine learning (ML) is a type of artificial intelligence ([AI](https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence)) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. Machine learning [algorithms](https://www.techtarget.com/whatis/definition/algorithm) use historical data as input to predict new output values.

\* 2>Deep learning: Deep learning is **part of a broader family of machine learning methods based on artificial neural networks with representation learning**

\* 3>Neural Network:  is **a method in artificial intelligence that teaches computers to process data in a way that is inspired by the human brain**

\* 4>**Cognitive Computing:** Cognitive computing describes technologies that are based on the scientific principles behind artificial intelligence and signal processing, encompassing machine self-learning, human-computer interaction, natural language processing, data mining and more.

\* 5>**Natural Language Processing:** Natural language processing strives to build machines that understand and respond to text or voice data—and respond with text or speech of their own—in much the same way humans do.

\* 6>**Computer Vision:** is **the process of using artificial intelligence to enable computers to obtain meaningful data from visual inputs.**

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