DAILY ASSESSMENT FORMAT

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Course:	TCS ION Career Edge - Knockdown the Lockdown	USN:	4AL17EC103
Topic:	Understand Artificial Intelligence (AI)	Semester & Section:	6-B
Github Repository:	Sachin-Courses		

FORENOON SESSION DETAILS

Certificate of completion :

Course Objective:

- Understand the role of basics.
- Knowledge representation.
- Problem solving and Learning methods of AI in engineering intelligent systems.
- Access the applicability strengths and weaknesses of these methods in solving particular engineering problems.

Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks. Most AI examples that you hear about today – from chess-playing computers to self-driving cars – rely heavily on deep learning and natural language processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data.

How Artificial Intelligence Works

AI works by combining large amounts of data with fast, iterative processing and intelligent algorithms, allowing the software to learn automatically from patterns or features in the data. AI is a broad field of study that includes many theories, methods and technologies, as well as the following major subfields:

- **Machine learning** automates analytical model building. It uses methods from neural networks, statistics, operations research and physics to find hidden insights in data without explicitly being programmed for where to look or what to conclude.
- **A neural network** is a type of machine learning that is made up of interconnected units (like neurons) that processes information by responding to external inputs, relaying information between each unit. The process requires multiple passes at the data to find connections and derive meaning from undefined data.
- **Deep learning** uses huge neural networks with many layers of processing units, taking advantage of advances in computing power and improved training techniques to learn complex patterns in large amounts of data. Common applications include image and speech recognition.
- **Cognitive computing** is a subfield of AI that strives for a natural, human-like interaction with machines. Using AI and cognitive computing, the ultimate goal is for a machine to simulate human processes through the ability to interpret images and speech – and then speak coherently in response.
- **Computer vision** relies on pattern recognition and deep learning to recognize what's in a picture or video. When machines can process, analyse and understand images, they can capture images or videos in real time and interpret their surroundings.
- **Natural language processing** (NLP) is the ability of computers to analyse, understand and generate human language, including speech. The next stage of NLP is natural language interaction, which allows humans to communicate with computers using normal, everyday language to perform tasks.

Additionally, several technologies enable and support AI:

Graphical processing units are key to AI because they provide the heavy compute power that's required for iterative processing. Training neural networks requires big data plus compute power.

The Internet of Things generates massive amounts of data from connected devices, most of it unanalysed. Automating models with AI will allow us to use more of it.

Advanced algorithms are being developed and combined in new ways to analyse more data faster and at multiple levels. This intelligent processing is key to identifying and predicting rare events, understanding complex systems and optimizing unique scenarios.

APIs, or application programming interfaces, are portable packages of code that make it possible to add AI functionality to existing products and software packages. They can add image recognition capabilities to home security systems and Q&A capabilities that describe data, create captions and headlines, or call out interesting patterns and insights in data.

In short, the goal of AI is to provide software that can reason on input and explain on output. AI will provide human-like interactions with software and offer decision support for specific tasks, but it's not a replacement for humans – and won't be anytime soon.

How Artificial Intelligence Is Being Used

Every industry has a high demand for AI capabilities – especially question answering systems that can be used for legal assistance, patent searches, risk notification and medical research. Other uses of AI include:

1. **Health Care :** AI applications can provide personalized medicine and X-ray readings. Personal health care assistants can act as life coaches, reminding you to take your pills, exercise or eat healthier.

2. **Retail :**AI provides virtual shopping capabilities that offer personalized recommendations and discuss purchase options with the consumer. Stock management and site layout technologies will also be improved with AI.

3. **Manufacturing** :AI can analyse factory IoT data as it streams from connected equipment to forecast expected load and demand using recurrent networks, a specific type of deep learning network used with sequence data.

4. **Banking :**Artificial Intelligence enhances the speed, precision and effectiveness of human efforts. In financial institutions, AI techniques can be used to identify which transactions are likely to be fraudulent, adopt fast and accurate credit scoring, as well as automate manually intense data management tasks.