1. Choose the statement that correctly defines deep learning. 1 / 1 point

- A type of data preprocessing
- A technique for unsupervised learning
- A specialized subset of machine learning
- A set of simple algorithms for data analysis

Correct
Deep learning is a specialized subset of machine learning that creates a neural network, an artificial replication of the brain's structure and functionality.

2. What type of artificial neural network is commonly employed for tasks such as time-series analysis and natural language processing? 1 / 1 point

- Recurrent neural network
- Deep feed-forward neural network
- Perceptron neural networks
- Feed-forward neural network

Correct
Recurrent neural network (RNN) carry the ability to use data from the previous step. RNNs are employed for time-series analysis and natural language processing.

3. Which of the following is the characteristic of a discriminator network? 1 / 1 point

- Generates new data samples
- Performs data augmentation
- Verifies generated data
- Creates data that looks real

Correct
The discriminator network tries to distinguish between real and fake data.

4. Choose a statement that best describes how an IoT device works. 1 / 1 point

- ○ IoT devices collect and store data locally. Then, they send it via the Internet to the cloud for analysis.
- ○ IoT devices continuously monitor their own battery levels and recharge automatically.
- ◉ IoT devices collect data and send it via the internet to the cloud for storage and analysis.
- ○ IoT devices analyze the local data and share it via Bluetooth.

Correct
IoT devices work by collecting data and sending it via the internet to the cloud for storage and analysis.

5. Which type of machine learning relies on providing an algorithm with a set of rules and constraints and letting it learn how to achieve its goals? 1 / 1 point

- ◉ Reinforcement learning
- ○ Supervised learning
- ○ Unsupervised learning
- ○ Transfer learning

Correct
Reinforcement learning relies on providing a machine learning algorithm with rules and constraints and letting it learn how to achieve its goals.

6. Which of the following categories of machine learning uses a reward function to penalize bad actions or reward good actions? 1 / 1 point

- ○ Supervised learning
- ◉ Reinforcement learning
- ○ Regression model
- ○ Neutral networks

Correct
Reinforcement learning is a different subset, and what this does is it uses a reward function to penalize bad actions or reward good actions.

7. Which of the following statements best describes edge AI? 1 / 1 point

- ○ AI that relies exclusively on cloud-based processing
- ○ AI that only analyzes data in centralized data centers
- ○ AI that requires continuous internet connection to function
- ◉ AI that allows devices to process data and make decisions locally

Correct
Edge AI is a type of AI that lives on the device itself, rather than relying on the cloud. This allows the devices to process data and make decisions locally.

8. What is edge computing? 1 / 1 point

- (●) Edge computing refers to processing data closer to where it is generated, such as on IoT devices, to reduce latency and bandwidth use.
- ( ) Edge computing is a technique that improves the display quality of video streaming services.
- ( ) Edge computing means storing all data in a central cloud server for analysis.
- ( ) Edge computing is a technology that focuses on increasing the physical size of data storage devices.

Correct
Edge computing processes data near its source to improve response times and save bandwidth by reducing the need to send data to central servers.

9. What is one of the primary reasons deep learning has gained popularity in recent years? 1 / 1 point

- (●) Deep learning models can automatically extract features from raw data without the need for manual feature engineering.
- ( ) Deep learning is based on symbolic AI, which makes it easier to interpret and understand.
- ( ) Deep learning only needs a small amount of labeled data to achieve high accuracy.
- ( ) Deep learning requires minimal computational power, making it accessible to everyone.

Correct
Deep learning's ability to automatically learn and extract features from raw data, eliminating the need for manual feature engineering, is a significant factor in its popularity.

10. What is the purpose of an activation function in a neural network? 1 / 1 point

- ( ) To determine the learning rate of the network.
- ( ) To control the flow of data within the input layer only.
- (●) To introduce non-linearity into the output of a neuron, enabling the network to learn complex patterns.
- ( ) To initialize the weights of the network.

Correct
Activation functions introduce non-linearity, allowing neural networks to learn complex relationships in the data.