

Chapter 04 – Computer Science (Class 10)

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Short Response Questions

Question No 1: How does data science help businesses make informed decisions? Give two industry examples.

Answer: Data science helps businesses by finding patterns and useful information from large amounts of data, which makes it easier for them to take smart decisions for the future. For example, banks use data science to detect fraud and predict which customers might need loans. In shopping stores or online shopping (like Amazon), companies use data science to recommend products to customers according to their buying habits and interests.

Question No 2: Identify three ways data science contributes to machine learning and artificial intelligence.

Answer: Data science helps machine learning and artificial intelligence first by collecting and cleaning big data so computers can learn from it without mistakes. Secondly, it selects the most important details (features) from data, making learning faster and easier for computers. Lastly, data science helps find hidden patterns or trends in data, so AI and machine learning can make better predictions and decisions in the real world.

Question No 3: Differentiate between supervised learning and unsupervised learning.

Answer: In supervised learning, we give the computer labeled data – for example, pictures of apples and bananas with their names – so it can learn to recognize new apples and bananas in the future. In unsupervised learning, the computer only gets unlabeled data, like a mix of fruits with no names, and it tries to group similar things together by itself, like sorting apples and bananas without any hints given.

Question No 4: Describe an everyday example that illustrates reinforcement learning.

Answer: A simple example of reinforcement learning is teaching a puppy to sit by giving it treats as rewards when it does the correct action and not giving anything if it doesn't. Over time, the puppy learns what behavior is good and repeats it to keep getting the reward. In the same way, in video games, a player can learn which steps to take to win by getting points or losing points for each action taken in the game.

Question No 5: Write the appropriate machine learning model for each of the following scenarios:

Answers:

Sr. No.	Scenario	Suitable Machine Learning Model	Reason (in simple words)
1	You have a basket of mixed fruits (apple and banana) and you want a robot to sort them.	Supervised Learning	We already know the names of fruits, so we can teach the robot using labelled data.
2	You are learning to ride a bicycle to take part in a sports event.	Reinforcement Learning	You learn by practice, trying again and again, just like the machine learns by rewards.
3	You have Lego blocks of different colors and want the computer to group them by colors.	Unsupervised Learning	We don't tell the computer the color names, it groups similar colors by itself.
4	You have a book with pictures and want to teach your sibling to recognize them.	Supervised Learning	You tell your sibling what each picture is, just like training with labelled data.
5	You want to train a toy robot to find its way out of a maze.	Reinforcement Learning	The robot learns from its mistakes and keeps improving by rewards and punishments.
6	Your parents want you to clean your room if you want to go to a party.	Reinforcement Learning	You do a task to get a reward, like how machines learn by doing something for reward.
7	You have shapes (square, triangle, circle) and want to teach a computer to recognize them.	Supervised Learning	You already know the shapes and you teach the computer with labels.
8	You have a book collection and want your sibling to arrange them by size, choice or ease.	Unsupervised Learning	No fixed labels, your sibling arranges them by observing patterns.
9	You are finding similarity in various ice cream flavors.	Unsupervised Learning	No labels, just finding which flavors are similar.
10	You have to unlock rewards in your video game.	Reinforcement Learning	You take actions and get rewards, just like how a machine learns by trying and winning.

The End

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