Class 7

# ANSWER KEY

## Artificial Intelligence

# 1. Introduction to AI

**Ai Reboot** (Page 10)

| Humans | Artificial Intelligence |
|---|---|
| Humans are naturally intelligent. | Artificial Intelligence is created by humans. |
| Intelligence level of human beings vary with time. | Artificial Intelligence keeps on increasing. |

## Ai Quiz

1. c 2. a 3. c 4. a

## Exercise

**A.** 1. False 2. True 3. False 4. False 5. True

**B.** 1. Machines 2. emotions 3. Super AI 4. Narrow

**C.** 1. AI is a branch of computer science that focusses on developing machines which can think and work like human beings

2. AI is of three types, Weak AI, Strong AI and Super AI.

3. The characteristics of Super AI are:

   a. These machines are fully autonomous, they don't need any kind of human interference.

   b. These machines are far smarter than humans and can also understand human emotions.

4. The differences between human and artificial intelligence are:

| Humans | Artificial Intelligence |
|---|---|
| Humans are naturally intelligent. | Artificial Intelligence is created by humans. |
| Intelligence level of human beings vary with time. | Artificial Intelligence keeps on increasing. |
| Humans behave according to their experience. | Machines perform according to their programming. |
| Human brain is analogous. | Artificial Intelligence is digital. |
| Humans can adapt to sudden changes in their surroundings. | Artificial Intelligence takes time to adapt to the changes in their surroundings. |



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# 2. Pioneers in the Field of AI

**Ai Reboot** (Page 22)

1. IBM created Deep Blue.
2. Edward Feigenbaum

## Ai Quiz

1. d 2. a 3. c 4. b 5. b

## Exercise

**A.** 1. John McCarthy 2. Edward Feigenbaum 3. Ross Quillian
4. Marvin Minsky 5. Artificial Intelligence

**B.** 1. False 2. True 3. True 4. True 5. False

**C.** 1. Turing test was a test developed by the brilliant British Mathematician, Biologist and Computer Scientist. This test was developed to determine if a machine can think or not. The test is still a matter of standards today. It states that if a computer can have a conversation with a human via a printer then that machine is thinking.

2. Ross Quillian developed the first semantic web.
3. John McCarthy developed the LISP programming language.
4. Edward Feigenbaum is often called the, "Father of Expert Systems". He was the joint winner of 1994 ACM Turing Award. While he was a student, he developed EPAM (Elementary Perceiver and Memorizer), one of the first computer models of how people learn, as his Ph.D. project. His project Dendral was the most important to AI Sciences. It used computer systems to identify and communicate the presence of diseases when given spectrometer readings of blood samples. This was the first use of an AI "Expert System".
5. It was an AI system which was dedicated to play chess with an objective to beat a human chess master using AI.

# 3. Domains of AI

**Ai Reboot** (Page 28)

Data and Natural Language Processing

**Ai Reboot** (Page 33)

Examine crop health and self-driving cars

## Ai Quiz

1. c 2. c 3. b 4. d

# Exercise

**A.** 1. False 2. True 3. True 4. True 5. True

**B.** 1. Self-driving cars 2. Voice assistants 3. Human intelligence
4. Intelligence

**C.** 1. There are three main domains of AI.

a. **Natural Language Processing (NLP):** This is a subfield in AI which helps in communication between human and computer in a natural language. It enables a computer to understand the natural language of a human being.

b. **Big data:** AI's ability to work so well with data analytics is because of its use of Big Data. Without making its presence known, big data has already been everywhere. Big data has become a valuable commodity.

c. **Computer Vision:** It is a very popular field of AI that trains a computer to understand and interpret the visual world. Human vision starts at the 'eyes' but machine uses digital images from a camera for vision.

2. Machine Learning is the study of computer algorithms that can improve automatically through experience and by the use of data. It is seen as a part of artificial intelligence.
3. Real Life uses of NLP are voice recognition system and smart voice assistant.
4. Computer Vision is a very popular field that trains a computer to understand and interpret the visual world.

# Test Sheet–1

(Based on units 1 to 3)

**A.** 1. c 2. a 3. d 4. a 5. c
6. c 7. b 8. b

**B.** 1. Turing test 2. John McCarthy 3. John McCarthy 4. Edward Feigenbaum
5. Self-driving cars 6. Voice assistants

**C.** 1. False 2. False 3. False 4. True 5. False
6. True

**D.** 1. AI is a branch of computer science that focusses on developing machines which can think and work like human beings.
2. Weak AI, Strong AI and Super AI.
3. It establishes that if a computer can have a simple dialogue with a person via a printer, then that itself is a proof that the machine is "thinking".
4. Ross Quillian developed the first semantic web.
5. There are three main domains of AI.

a. **Natural Language Processing (NLP):** This is a subfield in AI which helps in communication between human and computer in a natural language. It enables a computer to understand the natural language of a human being.

b. **Big data:** AI's ability to work so well with data analytics is because of its use of Big Data.

Without making its presence known, big data has already been everywhere. Big data has become a valuable commodity.

c. **Computer Vision:** It is a very popular field of AI that trains a computer to understand and interpret the visual world. Human vision starts at the 'eyes' but machine uses digital images from a camera for vision.

6. Machine Learning is the study of computer algorithms that can improve automatically through experience and by the use of data. It is seen as a part of artificial intelligence.

# 4. Fields of AI

**AI Reboot** (Page 41)

It suggests the banks for future outcomes and trends. It also helps banks to identify frauds and detect anti-money laundering patterns.

**AI Reboot** (Page 44)

AI helps the banks and financial sectors in various ways. AI predicts future scenarios by analysing past user experiences. This way it suggests the banks for future outcomes and trends. It also helps banks to identify frauds and detect anti-money laundering patterns.

AI assistants, such as chatbots, use artificial intelligence to generate personalized financial advice and natural language processing to provide instant, self-help customer service.

## AI Quiz

1. b 2. b 3. d 4. b 5. d

## Exercise

**A.** 1. False 2. True 3. False 4. True 5. True

**B.** 1. Artificial Intelligence 2. Computer Vision 3. Big Data 4. Shim
5. Essay grading

**C.** 1. AI in healthcare is used to diagnose ailments, treat patients, develop new drugs and take care of patients.

2. AI in e-commerce helps in interactive and personalized buying experience. With the AI-enabled systems, companies can see their customer's preferences and can boost their sales by reliable and customized shopping experiences.

3. Google Maps are the best examples of use of AI in Navigation. Google Maps use Machine Learning domain of AI to generate predictions of traffic patterns and live traffic conditions based on the sets of data.

4. AI in military helps to create robots and advanced surveillance systems to aid the soldiers.

5. Education sector can highly benefit with the use of AI. Now, primarily its being used as a tool to develop skills and test systems. Today essay-grading systems are in place to grade the children's thoughts in its primary stage. It can also be used in providing individualized learning, which is a challenging task at teacher's level.

# 5. Concept of Smart Living

**Ai Reboot** (Page 61)
Smart Speakers, smart thermostats and smart remote controllers.

## Ai Quiz

1. (This question was printed incorrectly in the book. Please correct it in your textbook.)
   **Ques.** ..... perform activities like creating a playlist, turning on reminders, searching information on the Internet, etc.
   a. Smart Thermostats  b. Smart Cameras
   c. Smart Speakers  d. Video Doorbells
   **Ans.** c

2. a  3. d  4. b

## Exercise

**A.** 1. False  2. True  3. False  4. True  5. True

**B.** 1. (This question was printed incorrectly in the book. Please correct it in your textbook.)
**Ques.** ..... often has a lot of remote systems to operate the various devices in use.
**Ans.** Smart home

2. (This question was printed incorrectly in the book. Please correct it in your textbook.)
**Ques.** Smart speakers are example of ..... home devices.
**Ans.** Smart

3. Voice  4. Smartphones

5. (This question was printed incorrectly in the book. Please correct it in your textbook.)
**Ques.** ..... device is capable of setting the temperature as per your preferences and time schedule.
**Ans.** Smart Thermostats

**C.** 1. Smart living is an evolving trend that improves the living standards of people by using smart devices to make the life comfortable.

2. Smart Doorbell, Ego Lawnmover and Eve Aqua

3. 
   - **Power Saver:** Smart Homes are great at saving power.
   - **Increased Energy Efficiency:** The Smart Home technology makes it possible to make the home energy-efficient.
   - **Protect Home and its Belongings:** The home is protected from intruders with AI systems.
   - **Interactive Home:** The AI enabled appliances are controlled through voice or smart phones.

4. (This question was printed incorrectly in the book. Please correct it in your textbook.)

**Ques.** Explain smart cameras.

**Ans.** Smart cameras are used to monitor the indoor and outdoor activities and record the moments and then send the alerts for suspicious movements.

The challenges that we will face while establishing a smart city are:

a. Requirement of a lot of resources.

b. Mapping new pathways for efficient wires

c. Accessibility of modern technology for the common folks could be difficult.

d. Using such advanced technology is also not easy for common people.

# 6. Future of Artificial Intelligence

**Ai Reboot** (Page 66)

CCTV based monitoring using AI can help in building surveillance systems to keep a check on potential criminal incidents and security of the residents.

## Ai Quiz

1. c 2. a 3. c 4. d

## Exercise

**A.** 1. Traffic management 2. No parking troubles
3. Automated transportation 4. Play our favourite song

**B.** 1. Computer Vision
2. filtered
3. Transactions
4. Computer Vision

**C.** 1. AI has the potential to make traffic more efficient, ease traffic congestion, free driver's time, make parking easier, and encourage car- and ridesharing. As AI helps to keep road traffic flowing, it can also reduce fuel consumption caused by vehicles idling when stationary and improve air quality and urban planning.

2. AI will have a huge impact on automated transport. Automated transportation will ensure that there are fewer accidents. Google began testing a self-driving car in 2012. Many other automobile manufacturers like General Motors, Ford, Mercedes, BMW, etc. are in the process of developing driverless car systems.

3. AI can revolutionize the way traffic can be controlled and managed in cities. Congestion can be reduced by route selection, predictive alerts, and route deviation.

4. Many other automobile manufacturers like General Motors, Ford, Mercedes, BMW, etc. are in the process of developing driverless car systems.

# Test Sheet–2

(Based on units 4 to 6)

**A.** 1. b 2. b 3. d 4. a 5. a
6. d 7. d 8. d 9. b

**B.** 1. Artificial Intelligence
2. Computer Vision
3. Smart city
4. Smart

**C.** 1. False 2. True 3. False 4. True

**D.** 1. AI in healthcare is used to diagnose ailments, treat patients, develop new drugs and take care of patients.
2. AI in e-commerce helps in interactive and personalized buying experience. With the AI-enabled systems, companies can see their customer's preferences and can boost their sales by reliable and customized shopping experiences.
3. Smart living is an evolving trend that improves the living standards of people by using smart devices to make the life comfortable.
4. Smart speakers, smart thermostats and smart remote controllers.
5. AI has the potential to make traffic more efficient, ease traffic congestion, free driver's time, make parking easier, and encourage car- and ridesharing. As AI helps to keep road traffic flowing, it can also reduce fuel consumption caused by vehicles idling when stationary and improve air quality and urban planning.
6. AI will have a huge impact on automated transport. Automated transportation will ensure that there are fewer accidents. Google began testing a self-driving car in 2012. Many other automobile manufacturers like General Motors, Ford, Mercedes, BMW, etc. are in the process of developing driverless car systems.