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**9TH CLASS
COMPUTER SCIENCE & ENTREPRENEURSHIP**

CHAPTER 10

Emerging Technologies in Computer Science

86 Solved MCQs

with ticked answers & explanations

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Section 1: Introduction to Artificial Intelligence & History

Q1. What does Artificial Intelligence (AI) primarily simulate?

- ☐ A) Physical human strength
- ☒ **B) Human thinking and learning in computers**
- ☐ C) Emotional intelligence in animals
- ☐ D) Mechanical engineering processes

Correct Answer: B) Human thinking and learning in computers

Explanation

AI is defined in the text as the simulation of human thinking ability in computer systems to think and learn like humans. It focuses on cognitive functions rather than physical strength.

Q2. Who first invented the term "Artificial Intelligence" and when?

- ☐ A) Alan Turing in 1950
- ☒ **B) John McCarthy in 1956**
- ☐ C) Allen Newell in 1955
- ☐ D) Kevin Ashton in 1999

Correct Answer: B) John McCarthy in 1956

Explanation

The text explicitly states that the term AI was first coined by John McCarthy in 1956 during the Dartmouth Conference, which is regarded as the origin of AI as a research discipline.

Q3. During which period did AI research focus on problem-solving and symbolic methods?

- ☐ A) 1970s-1980s
- ☐ B) 1990s
- ☒ **C) 1950s-1960s**
- ☐ D) 2000s

Correct Answer: C) 1950s-1960s**Explanation**

The historical timeline in the chapter highlights that early AI research in the 1950s-1960s focused on problem-solving and symbolic methods. The 70s and 80s shifted to expert systems.

Q4. The development of expert systems that mimicked human decision-making occurred in the:

☐ A) 1950s-1960s

☒ **B) 1970s-1980s**

☐ C) 1990s

☐ D) 2010s

Correct Answer: B) 1970s-1980s**Explanation**

The 1970s-1980s marked the development of expert systems. These were designed to mimic the decision-making ability of a human expert in specific domains.

Q5. What significant shift in AI happened in the 1990s?

☐ A) The invention of the Turing Test

☒ **B) The rise of machine learning and learning from data**

☐ C) The creation of the first chatbot

☐ D) The introduction of the term AI

Correct Answer: B) The rise of machine learning and learning from data

Explanation

The 1990s saw the rise of machine learning, moving away from hardcoded rules to computers learning patterns from data.

Q6. What was the first AI program created in 1955 by Allen Newell and Herbert A. Simon called?

☐ A) Deep Blue

☐ B) MYCIN

☒ **C) Logic Theorist**

☐ D) ChatGPT

Correct Answer: C) Logic Theorist**Explanation**

The "Did You Know?" section in the text highlights that the Logic Theorist was the first AI program, designed to mimic human problem-solving skills.

Q7. In which year was the first chatbot created?

☐ A) 1950

☒ **B) 1966**

☐ C) 1972

☐ D) 1997

Correct Answer: B) 1966**Explanation**

Figure 10.1 (Key Milestones in the History of AI) clearly marks 1966 as the year the first chatbot was created.

Q8. Which milestone in AI history occurred in 1997?

- ☐ A) Voice assistants were introduced
- ☐ B) ChatGPT was introduced
- ☒ C) Chess machine Deep Blue beat Garry Kasparov
- ☐ D) MYCIN was developed for medicine

Correct Answer: C) Chess machine Deep Blue beat Garry Kasparov

Explanation

The timeline indicates that in 1997, the chess machine Deep Blue made history by defeating the world champion, a major milestone in AI capability.

Q9. MYCIN, developed in 1972, was an AI system used in:

- ☐ A) Gaming
- ☒ B) Medicine
- ☐ C) Transportation
- ☐ D) Social Media

Correct Answer: B) Medicine**Explanation**

The timeline in Figure 10.1 labels 1972 as the year MYCIN was introduced for use in medicine, specifically to diagnose bacterial infections.

Q10. What was introduced in 2023 that is designed to understand human-like text-based input?

- ☐ A) Voice assistants
- ☐ B) Deep learning
- ☒ C) ChatGPT
- ☐ D) Turing Test

Correct Answer: C) ChatGPT**Explanation**

The timeline and introduction state that ChatGPT was introduced in 2023 as an AI-based model designed to understand human-like text-based input.

Q11. When was the Turing Test introduced?

☒ **A) 1950**

☐ B) 1956

☐ C) 1966

☐ D) 1972

Correct Answer: A) 1950

Explanation

Figure 10.1 shows the Turing Test was introduced in 1950, which was a foundational test for a machine's ability to exhibit intelligent behavior.

Q12. What was the primary focus of AI research in the 2000s?

☐ A) Expert systems

☐ B) Symbolic methods

☒ **C) Deep learning, NLP, and robotics**

☐ D) Voice recognition

Correct Answer: C) Deep learning, NLP, and robotics

Explanation

The text states that advances in deep learning, natural language processing, and robotics significantly expanded AI's capabilities in the 2000s.

Section 2: Applications and Subfields of AI

Q13. Which domain uses AI for diagnosing diseases and personalizing treatment plans?

☐ A) Education

☒ **B) Healthcare**

☐ C) Gaming

☐ D) Finance

Correct Answer: B) Healthcare

Explanation

The text lists healthcare as a primary domain where AI is used for diagnosing diseases, personalizing treatment plans, and predicting patient outcomes.

Q14. AI-powered tools that provide personalized learning experiences and automate administrative tasks are used in:

☒ **A) Education**

☐ B) Agriculture

☐ C) E-commerce

☐ D) Automobile

Correct Answer: A) Education

Explanation

In the education domain, AI provides personalized learning, automates admin tasks, and offers insights into student performance.

Q15. How is AI used in the gaming industry?

☐ A) To diagnose player illnesses

☒ **B) To enhance game design and create realistic characters**

☐ C) To manage traffic lights

☐ D) To predict crop yields

Correct Answer: B) To enhance game design and create realistic characters

Explanation

The text explicitly mentions that in gaming, AI enhances game design, creates realistic characters, and improves player experiences.

Q16. Self-driving cars and traffic management systems rely on AI in which domain?

☒ **A) Automobile and Transportation**

☐ B) Finance

☐ C) Social Media

☐ D) Healthcare

Correct Answer: A) Automobile and Transportation

Explanation

Both Transportation (self-driving cars, traffic management) and Automobile (autonomous driving, ADAS) rely heavily on AI to improve safety and efficiency.

Q17. In the finance industry, AI is transforming operations by enabling:

- ☐ A) Crop yield prediction
- ☒ **B) Personalized investment recommendations and fraud detection**
- ☐ C) Realistic character creation
- ☐ D) Patient monitoring

Correct Answer: B) Personalized investment recommendations and fraud detection

Explanation

The text highlights that AI in finance powers personalized investment recommendations, fraud detection, algorithmic trading, and risk assessment.

Q18. How does AI enhance social media platforms?

- ☐ A) By building cars
- ☒ **B) By powering personalized content recommendations and sentiment analysis**
- ☐ C) By diagnosing diseases
- ☐ D) By controlling smart home devices

Correct Answer: B) By powering personalized content recommendations and sentiment analysis

Explanation

AI on social media analyzes user behavior for content recommendations, automated content generation, sentiment analysis, and targeted advertising.

Q19. Precision farming, predictive analytics for crop yields, and automated irrigation systems are AI applications in:

- ☐ A) E-commerce
- ☒ **B) Agriculture**
- ☐ C) Space Exploration
- ☐ D) Entertainment

Correct Answer: B) Agriculture

Explanation

The text specifically mentions that AI in agriculture enables precision farming techniques, predictive analytics for crop yields, and automated irrigation systems.

Q20. Which subfield of AI allows computers to learn from experience without being explicitly programmed?

- ☐ A) Computer Vision
- ☒ **B) Machine Learning**
- ☐ C) Natural Language Processing
- ☐ D) Robotics

Correct Answer: B) Machine Learning

Explanation

Machine Learning is defined in the text as a type of AI where computers learn from experience and improve over time without being explicitly programmed.

Q21. What is a special kind of machine learning that uses complex structures called neural networks?

- ☒ **A) Deep Learning**
- ☐ B) Rule-Based Systems
- ☐ C) Linear Regression
- ☐ D) Decision Trees

Correct Answer: A) Deep Learning**Explanation**

Deep Learning is described as a special kind of machine learning that uses complex structures called neural networks, inspired by how our brains work.

Q22. Natural Language Processing (NLP) helps computers:

- ☐ A) See and understand the visual world
- ☒ **B) Understand and talk to us in our own language**
- ☐ C) Build and program robots
- ☐ D) Predict stock market trends

Correct Answer: B) Understand and talk to us in our own language**Explanation**

NLP is a technology that helps computers understand, read, write, and talk to us in our own language. Examples include Siri, Alexa, and autocomplete.

Q23. When you ask Siri or Alexa a question, which AI subfield is primarily at work?

- ☐ A) Computer Vision
- ☐ B) Robotics
- ☒ **C) Natural Language Processing (NLP)**
- ☐ D) Machine Learning

Correct Answer: C) Natural Language Processing (NLP)

Explanation

The text uses Siri and Alexa as prime examples of NLP, which processes spoken language to understand and answer questions.

Q24. Computer Vision enables computers to:

- ☐ A) Understand human emotions
- ☒ **B) See and understand the visual world, interpreting images and videos**
- ☐ C) Walk and move like humans
- ☐ D) Translate languages

Correct Answer: B) See and understand the visual world, interpreting images and videos

Explanation

Computer Vision is the field of AI that enables computers to see and understand the visual world, allowing them to interpret images and videos.

Q25. The science of building and programming robots is called:

- ☐ A) Deep Learning
- ☒ **B) Robotics**
- ☐ C) NLP
- ☐ D) Computer Vision

Correct Answer: B) Robotics

Explanation

Robotics is defined in the text as the science of building and programming robots to do tasks for us, like cleaning or building cars.

Q26. In Pakistan, robots and machines are being used to perform:

- ☐ A) Traffic management
- ☒ **B) Medical operations**
- ☐ C) Agricultural harvesting
- ☐ D) Teaching in schools

Correct Answer: B) Medical operations

Explanation

The "Did You Know?" section states that in Pakistan, robots and machines are being used to perform medical operations.

Q27. Which of the following is a listed domain of AI application in the text?

- ☐ A) Space Exploration
- ☒ **B) Healthcare**
- ☐ C) Archaeology
- ☐ D) Geology

Correct Answer: B) Healthcare**Explanation**

Healthcare is explicitly listed and detailed in the bullet points. Space exploration is only in the diagram, while archaeology and geology are not mentioned.

Q28. AI-driven systems monitor crop health and predict yields by getting data from:

☐ A) Social media platforms

☒ **B) Sensors and drones**

☐ C) Financial databases

☐ D) Medical records

Correct Answer: B) Sensors and drones**Explanation**

The introduction states that AI-driven systems monitor crop health and predict yields by getting data from sensors and drones to optimize farming practices.

Section 3: AI Algorithms and Techniques

Q29. AI algorithms are broadly categorized into which two types based on interpretability?

- ☐ A) Fast and Slow
- ☒ **B) Explainable (Whitebox) and Unexplainable (Blackbox)**
- ☐ C) Simple and Complex
- ☐ D) Supervised and Unsupervised

Correct Answer: B) Explainable (Whitebox) and Unexplainable (Blackbox)

Explanation

The text categorizes AI algorithms based on their interpretability into Explainable (Whitebox) and Unexplainable (Blackbox) algorithms.

Q30. Which type of algorithm has a transparent and understandable decision-making process?

- ☐ A) Blackbox
- ☒ **B) Whitebox (Explainable)**
- ☐ C) Neural Network
- ☐ D) Deep Learning

Correct Answer: B) Whitebox (Explainable)

Explanation

Explainable or Whitebox algorithms are those where the decision-making process is transparent and understandable to users.

Q31. Which of the following is an example of an Explainable (Whitebox) algorithm?

- ☐ A) Neural Networks
- ☐ B) Deep Learning Models
- ☒ **C) Decision Trees**
- ☐ D) Blackbox Models

Correct Answer: C) Decision Trees**Explanation**

Decision Trees are listed as an example of Whitebox algorithms because they follow a series of understandable questions leading to a final answer.

Q32. A Decision Tree is a tool that helps computers make decisions by:

- ☐ A) Using complex neural networks
- ☒ **B) Following a series of questions, much like a flowchart**
- ☐ C) Analyzing massive datasets without human intervention
- ☐ D) Using "if-then" rules exclusively

Correct Answer: B) Following a series of questions, much like a flowchart

Explanation

The text describes a Decision Tree as a flowchart-like tool where each question leads to another question or a final answer.

Q33. In the decision tree example provided, what determines if an animal is a Hawk?

☒ **A) Has feathers -> Can fly = True**

☐ B) Has feathers -> Has fins = True

☐ C) Has feathers = False -> Has fins = True

☐ D) Has feathers = False -> Has fins = False

Correct Answer: A) Has feathers -> Can fly = True

Explanation

In the diagram, if the animal has feathers (True) and can fly (True), the tree identifies it as a Hawk.

Q34. According to the decision tree, which animal has feathers but cannot fly?

☐ A) Hawk

☒ **B) Penguin**

☐ C) Dolphin

☐ D) Bear

Correct Answer: B) Penguin**Explanation**

Following the tree: Has feathers = True -> Can fly = False -> leads to Penguin.

Q35. Linear Regression helps find the relationship between:

- ☐ A) Three features
- ☒ **B) Two features**
- ☐ C) Five features
- ☐ D) Unlimited features

Correct Answer: B) Two features**Explanation**

The text defines Linear Regression as a way to find the relationship between two features, finding a straight line that best fits the data points.

Q36. In the Linear Regression example, what is the relationship being analyzed?

☒ **A) Study time and grades**

☐ B) Diet and height

☐ C) Exercise and weight

☐ D) Sleep and test scores

Correct Answer: A) Study time and grades

Explanation

The example uses Linear Regression to predict grades based on the number of hours studied.

Q37. Rule-based systems are like a set of:

☒ **A) "If-then" rules**

☐ B) Neural networks

☐ C) Decision trees

☐ D) Linear regression lines

Correct Answer: A) "If-then" rules**Explanation**

Rule-based systems are described as a set of "if-then" rules written by humans to help computers understand what to do in different situations.

Q38. In the rule-based system example, what happens if the character is about to hit an obstacle?

- ☐ A) It stops
- ☒ **B) It jumps**
- ☐ C) It ducks
- ☐ D) It runs away

Correct Answer: B) It jumps**Explanation**

The text gives the example: "if the character is about to hit an obstacle, then jump."

Q39. Why are Explainable AI algorithms important in fields like healthcare and finance?

- ☐ A) They are faster
- ☐ B) They are cheaper
- ☒ C) Understanding the decision-making process is essential for trust and accountability
- ☐ D) They require less data

Correct Answer: C) Understanding the decision-making process is essential for trust and accountability

Explanation

The text states that explainable AI is crucial in healthcare and finance because understanding how decisions are made is essential for trust and accountability.

Q40. Unexplainable (Blackbox) algorithms are characterized by:

- ☐ A) Simple, transparent logic
- ☒ **B) Complex computations and interactions that are difficult to understand**
- ☐ C) A series of clear if-then rules
- ☐ D) Direct human readability

Correct Answer: B) Complex computations and interactions that are difficult to understand

Explanation

Blackbox algorithms involve complex computations and interactions that make it difficult to understand how a particular decision was reached.

Q41. Which of the following is an example of an Unexplainable (Blackbox) algorithm?

- ☐ A) Decision Tree
- ☐ B) Linear Regression
- ☐ C) Rule-Based System

☒ **D) Neural Networks and Deep Learning Models**

Correct Answer: D) Neural Networks and Deep Learning Models

Explanation

The text explicitly lists neural networks and deep learning models as examples of blackbox algorithms.

Q42. Google's AlphaGo, which defeated a world champion in Go, is an example of:

- ☐ A) Rule-Based System
- ☒ B) Reinforcement Learning Model
- ☐ C) Linear Regression
- ☐ D) Decision Tree

Correct Answer: B) Reinforcement Learning Model

Explanation

The "Did You Know?" section states that Google's AlphaGo is a reinforcement learning model that made headlines by defeating a world champion in Go.

Section 4: Internet of Things (IoT) - Basics and Components

Q43. What does IoT stand for?

- ☐ A) Internet of Technology
- ☒ **B) Internet of Things**
- ☐ C) Integration of Things
- ☐ D) Interconnection of Technology

Correct Answer: B) Internet of Things

Explanation

IoT stands for Internet of Things, referring to the network of physical objects connected to the internet.

Q44. Who coined the term "Internet of Things" and when?

- ☐ A) John McCarthy in 1956
- ☒ **B) Kevin Ashton in 1999**
- ☐ C) Allen Newell in 1955
- ☐ D) Alan Turing in 1950

Correct Answer: B) Kevin Ashton in 1999**Explanation**

The "Did You Know?" section states that the term "Internet of Things" was coined by Kevin Ashton in 1999.

Q45. IoT is defined as a network of physical objects equipped with:

- ☒ **A) Sensors, software, and other technologies**
- ☐ B) Only hardware
- ☐ C) Only software
- ☐ D) Mechanical gears

Correct Answer: A) Sensors, software, and other technologies**Explanation**

The definition of IoT includes physical objects equipped with sensors, software, and other technologies to exchange data over the internet.

Q46. What is the primary significance of IoT?

- ☐ A) It replaces the internet
- ☒ **B) It allows for the seamless integration of the physical and digital worlds**
- ☐ C) It makes computers faster
- ☐ D) It eliminates the need for sensors

Correct Answer: B) It allows for the seamless integration of the physical and digital worlds

Explanation

The significance of IoT is that it allows for the seamless integration of the physical and digital worlds, enabling data collection and analysis for improved efficiency.

Q47. Which component of an IoT system detects and measures physical properties like temperature and motion?

- ☐ A) Actuators
- ☒ **B) Sensors**
- ☐ C) Networks
- ☐ D) Data Analysis

Correct Answer: B) Sensors**Explanation**

Sensors are defined as devices that detect and measure physical properties like temperature, humidity, light, and motion, collecting data from the environment.

Q48. What component of an IoT system converts energy into motion?

☐ A) Sensors

☒ **B) Actuators**

☐ C) Devices

☐ D) Networks

Correct Answer: B) Actuators**Explanation**

Actuators are devices that convert energy into motion. In IoT, an actuator can act on data to generate output.

Q49. Which of the following is an example of a "Device" in an IoT system?

- ☐ A) A temperature sensor
- ☒ **B) A smartwatch**
- ☐ C) A Wi-Fi router
- ☐ D) A cloud server

Correct Answer: B) A smartwatch

Explanation

Devices in IoT include everyday objects like smartwatches, refrigerators, and cars that are connected to the internet.

Q50. What connects sensors and devices to the internet, allowing them to share data?

- ☐ A) Actuators
- ☒ **B) Networks**
- ☐ C) Data Analysis
- ☐ D) Cloud Storage

Correct Answer: B) Networks**Explanation**

Networks are the communication pathways (wired or wireless) that connect sensors and devices to the internet.

Q51. Processing and analyzing data collected by sensors to gain insights is called:



A) Data Analysis



B) Data Collection



C) Networking



D) Actuation

Correct Answer: A) Data Analysis**Explanation**

Data Analysis involves processing and analyzing the data collected by sensors to gain insights and make decisions.

Q52. Where can data analysis in IoT be performed?

☐ A) Only on the device itself

☐ B) Only in the cloud

☒ **C) On the device, in the cloud, or on a central server**

☐ D) Only on a central server

Correct Answer: C) On the device, in the cloud, or on a central server

Explanation

The text states that data analysis can be done on the device itself, in the cloud, or on a central server.

Q53. Which of the following is a practical example of an IoT system mentioned in the text?

☐ A) A standalone calculator

☒ **B) A smart home system**

☐ C) A printed book

☐ D) A mechanical watch

Correct Answer: B) A smart home system**Explanation**

The text uses a smart home system as a practical example of IoT, including temperature control, lighting, and surveillance cameras.

Q54. What can smart home devices do to save energy when you're not home?

☒ **A) Automatically turn off lights and adjust heating/cooling**

☐ B) Lock all doors

☐ C) Call the police

☐ D) Play music

Correct Answer: A) Automatically turn off lights and adjust heating/cooling

Explanation

The "Did You Know?" section states that smart home devices can save energy by automatically turning off lights and adjusting heating or cooling when you're not home.

Q55. Always ensure your IoT devices are connected to a secure network to:

- ☐ A) Increase internet speed
- ☒ **B) Protect your data from unauthorized access**
- ☐ C) Save battery life
- ☐ D) Improve device performance

Correct Answer: B) Protect your data from unauthorized access

Explanation

The "Tidbits" section warns to always connect IoT devices to a secure network to protect data from unauthorized access.

Q56. Over 20 billion IoT devices were in use worldwide in which year?

- ☐ A) 2010
- ☐ B) 2015
- ☒ **C) 2020**
- ☐ D) 2023

Correct Answer: C) 2020

Explanation

The "Did You Know?" section states that in 2020, there were over 20 billion IoT devices in use worldwide.

Section 5: IoT Applications and Security

Q57. How is IoT revolutionizing healthcare?

- ☐ A) By performing surgeries
- ☒ B) By providing better patient monitoring and care
- ☐ C) By replacing doctors
- ☐ D) By manufacturing medicines

Correct Answer: B) By providing better patient monitoring and care

Explanation

IoT in healthcare tracks vital signs, reminds patients to take medication, and alerts providers in emergencies, improving monitoring and care.

Q58. In transportation, IoT enhances systems by:

☐ A) Building roads

☒ **B) Making them more efficient and safer through connected vehicles and smart traffic lights**

☐ C) Manufacturing cars

☐ D) Training drivers

Correct Answer: B) Making them more efficient and safer through connected vehicles and smart traffic lights

Explanation

The text states that IoT enhances transportation systems through connected vehicles, smart traffic lights, and real-time tracking, making them more efficient and safer.

Q59. Which of the following is NOT a recommended security measure for IoT devices?

- ☐ A) Using strong, unique passwords
- ☐ B) Keeping software and firmware updated
- ☒ **C) Using a public, unsecured Wi-Fi network**
- ☐ D) Encrypting data transmitted between devices

Correct Answer: C) Using a public, unsecured Wi-Fi network

Explanation

The text advises using strong passwords, regular updates, and encryption. It warns against unauthorized access, implying that unsecured networks are a risk.

Q60. Why is encryption important in IoT deployments?

- ☐ A) To make devices run faster
- ☒ **B) To protect data from being intercepted by hackers**
- ☐ C) To reduce energy consumption
- ☐ D) To increase storage capacity

Correct Answer: B) To protect data from being intercepted by hackers

Explanation

Encryption ensures that data transmitted between devices is encrypted to protect it from being intercepted by hackers.

Q61. What is a major security concern in IoT deployments?

☐ A) Devices are too expensive

☒ **B) As more devices connect, cyber-attack risks increase**

☐ C) Devices are too large

☐ D) Devices consume too much electricity

Correct Answer: B) As more devices connect, cyber-attack risks increase

Explanation

The text explicitly states that as more devices are connected to the internet, the risk of cyber-attacks increases, raising security and privacy concerns.

Q62. Why is it important to use devices from reputable manufacturers?

☐ A) They are cheaper

☒ **B) To ensure better security and regular updates**

☐ C) They look better

☐ D) They are faster

Correct Answer: B) To ensure better security and regular updates

Explanation

The "Tidbits" section advises using devices from reputable manufacturers to ensure better security practices and to keep health data secure with strong passwords and updates.

Q63. In the context of IoT in healthcare, what does "Analytics" refer to?

☒ **A) Descriptive, Diagnostic, Event-Based, and Predictive**

☐ B) Only Predictive

☐ C) Only Descriptive

☐ D) Financial Analytics

Correct Answer: A) Descriptive, Diagnostic, Event-Based, and Predictive

Explanation

Figure 10.5 shows that Analytics in IoT Healthcare includes Descriptive, Diagnostic, Event-Based, and Predictive analytics.

Q64. What is a key benefit of IoT in transportation according to the text?

☐ A) Increased traffic congestion

☒ B) Real-time tracking systems

☐ C) Higher fuel consumption

☐ D) Decreased safety

Correct Answer: B) Real-time tracking systems

Explanation

The text lists connected vehicles, smart traffic lights, and real-time tracking systems as examples of how IoT is used to improve transportation.

Q65. What does the "Application Platform" in an IoT Healthcare System Architecture do?

- ☐ A) Collects raw data
- ☒ **B) Provides the interface for monitoring and analysis**
- ☐ C) Connects to the internet
- ☐ D) Acts as a sensor

Correct Answer: B) Provides the interface for monitoring and analysis

Explanation

Figure 10.5 shows the Application Platform as the layer where the user interacts with the system, likely for monitoring and analysis, bridging the sensors and connectivity layers.

Section 6: Implications, Risks, and Societal Impact

Q66. What is a potential risk associated with AI and IoT regarding personal information?

- ☒ **A) Data Privacy**
- ☐ B) Increased speed
- ☐ C) Better healthcare
- ☐ D) Improved efficiency

Correct Answer: A) Data Privacy

Explanation

Data Privacy is a major risk. As AI and IoT devices collect vast amounts of data, personal and sensitive information can be misused or accessed without authorization.

Q67. What is Algorithmic Bias?

- ☐ A) When algorithms run too fast
- ☒ **B) When AI models perpetuate or amplify biases present in training data**
- ☐ C) When algorithms are too complex
- ☐ D) When algorithms use too much electricity

Correct Answer: B) When AI models perpetuate or amplify biases present in training data

Explanation

Algorithmic Bias occurs when training data contains biases, leading AI models to inadvertently perpetuate or amplify these biases, causing unfair outcomes in areas like hiring or law enforcement.

Q68. Which regulation is mentioned as an example of Data Protection Laws?

- ☐ A) HIPAA
- ☒ **B) GDPR (General Data Protection Regulation)**
- ☐ C) TCP/IP
- ☐ D) HTML

Correct Answer: B) GDPR (General Data Protection Regulation)

Explanation

The text mentions the General Data Protection Regulation (GDPR) in Europe as an example of strict data protection regulations.

Q69. Which organization has developed guidelines for ethical AI?

☐ A) NASA

☒ B) IEEE

☐ C) WHO

☐ D) FIFA

Correct Answer: B) IEEE

Explanation

The text states that organizations like the IEEE have developed guidelines for ethical AI to ensure fairness, transparency, and accountability.

Q70. What do Bias Mitigation Standards aim to do?

- ☐ A) Increase AI speed
- ☒ **B) Identify and mitigate biases in AI models**
- ☐ C) Reduce AI costs
- ☐ D) Eliminate AI entirely

Correct Answer: B) Identify and mitigate biases in AI models

Explanation

Bias Mitigation Standards involve developing best practices for identifying and mitigating biases, including guidelines for diverse data collection.

Q71. How do AI and IoT impact daily life?

- ☐ A) By making life more complicated
- ☒ **B) By providing smart solutions for homes, healthcare, and transportation**
- ☐ C) By reducing access to technology
- ☐ D) By eliminating human interaction

Correct Answer: B) By providing smart solutions for homes, healthcare, and transportation

Explanation

The text highlights that AI and IoT enhance daily lives through smart homes, wearable health monitors, and other conveniences.

Q72. In work environments, how is AI revolutionizing workplaces?

☐ A) By reducing efficiency

☒ **B) By automating repetitive tasks and enabling data-driven decision-making**

☐ C) By replacing all human workers

☐ D) By decreasing productivity

Correct Answer: B) By automating repetitive tasks and enabling data-driven decision-making

Explanation

AI revolutionizes workplaces by automating repetitive tasks, improving efficiency, and enabling data-driven decision-making.

Q73. How do smart cities leverage IoT?

☐ A) To increase traffic congestion

☒ **B) To manage resources efficiently and improve public services**

☐ C) To reduce internet access

☐ D) To build more roads

Correct Answer: B) To manage resources efficiently and improve public services

Explanation

The text states that smart cities leverage IoT to manage resources efficiently, reduce traffic congestion, and improve public services.

Q74. What is a key strategy for addressing ethical concerns of AI and IoT?

☐ A) Ignoring the risks

☒ **B) Maximizing societal benefits while minimizing risks through policy and regulation**

☐ C) Banning all AI and IoT devices

☐ D) Letting companies self-regulate without oversight

Correct Answer: B) Maximizing societal benefits while minimizing risks through policy and regulation

Explanation

The text emphasizes developing strategies for addressing ethical concerns and maximizing societal benefits through comprehensive policy and regulatory frameworks.

Q75. Which of the following is a societal impact of AI and IoT?

☒ **A) Addressing large-scale challenges like climate change and healthcare accessibility**

☐ B) Decreasing global communication

☐ C) Increasing manual labor

☐ D) Reducing technological advancement

Correct Answer: A) Addressing large-scale challenges like climate change and healthcare accessibility

Explanation

The text mentions that AI and IoT have the potential to address large-scale societal challenges such as climate change, healthcare accessibility, and urbanization.

Q76. What is the role of strict data protection regulations?

☒ **A) To ensure personal data is collected, stored, and processed securely**

☐ B) To make data collection illegal

☐ C) To slow down AI development

☐ D) To increase data breaches

Correct Answer: A) To ensure personal data is collected, stored, and processed securely

Explanation

Data Protection Laws aim to ensure that personal data is collected, stored, and processed securely, protecting users from misuse.

Q77. What does "Data Analysis" in an IoT system help with?

☐ A) Slowing down the system

☒ **B) Gaining insights and making decisions**

☐ C) Increasing hardware costs

☐ D) Reducing network connectivity

Correct Answer: B) Gaining insights and making decisions

Explanation

Data Analysis processes sensor data to gain insights and make informed decisions, which is a core function of IoT systems.

Q78. Which of the following accurately describes Machine Learning?

☒ **A) Computers learning from experience without explicit programming**

☐ B) Computers following strict pre-programmed rules

☐ C) Computers understanding visual images

☐ D) Computers building physical robots

Correct Answer: A) Computers learning from experience without explicit programming

Explanation

Machine Learning is defined as a type of AI where computers learn from experience and improve over time without being explicitly programmed.

Q79. Which of the following accurately describes Deep Learning?

- ☐ A) A type of AI that uses rule-based systems
- ☒ **B) A special kind of machine learning using neural networks**
- ☐ C) A type of linear regression
- ☐ D) A simple decision tree

Correct Answer: B) A special kind of machine learning using neural networks

Explanation

Deep Learning is a specialized subset of machine learning that utilizes complex neural networks inspired by the human brain.

Q80. Which of the following accurately describes NLP?

- ☒ **A) A technology that helps computers understand and talk in human language**
- ☐ B) A technology that helps computers see
- ☐ C) A technology that helps computers move
- ☐ D) A technology that helps computers calculate

Correct Answer: A) A technology that helps computers understand and talk in human language

Explanation

NLP stands for Natural Language Processing, enabling computers to understand, read, write, and communicate in human languages.

Q81. Which of the following accurately describes Computer Vision?

- ☒ **A) A field of AI that enables computers to see and understand the visual world**
- ☐ B) A field of AI that enables computers to speak
- ☐ C) A field of AI that enables computers to learn from data
- ☐ D) A field of AI that enables computers to build robots

Correct Answer: A) A field of AI that enables computers to see and understand the visual world

Explanation

Computer Vision is the subfield of AI focused on enabling computers to interpret and understand visual information from images and videos.

Q82. Which of the following accurately describes Robotics?

☒ **A) The science of building and programming robots**

☐ B) The science of teaching computers to speak

☐ C) The science of analyzing data

☐ D) The science of designing neural networks

Correct Answer: A) The science of building and programming robots

Explanation

Robotics is defined as the science of building and programming robots to perform tasks for humans.

Q83. Explainable AI algorithms are also known as:

☐ A) Blackbox algorithms

☒ **B) Whitebox algorithms**

☐ C) Neural networks

☐ D) Deep learning models

Correct Answer: B) Whitebox algorithms**Explanation**

Explainable AI algorithms are referred to as Whitebox algorithms because their decision-making processes are transparent and understandable.

Q84. Unexplainable AI algorithms are also known as:

☒ **A) Blackbox algorithms**

☐ B) Whitebox algorithms

☐ C) Decision trees

☐ D) Rule-based systems

Correct Answer: A) Blackbox algorithms**Explanation**

Unexplainable AI algorithms are called Blackbox algorithms because their internal decision-making processes are complex and difficult to interpret.

Q85. What is the Internet of Things (IoT)?

☒ **A) A network of physical objects embedded with sensors, software, and technologies to connect and exchange data over the internet**

☐ B) A social media platform

☐ C) A type of AI algorithm

☐ D) A programming language

Correct Answer: A) A network of physical objects embedded with sensors, software, and technologies to connect and exchange data over the internet

Explanation

The summary defines IoT as the network of physical objects (things) embedded with sensors, software, and other technologies to connect and exchange data with other devices and systems over the internet.

Q86. Which of the following is an example of a Blackbox AI model?

- ☐ A) Decision Tree
- ☐ B) Linear Regression
- ☒ **C) Neural Network**
- ☐ D) Rule-Based System

Correct Answer: C) Neural Network

Explanation

Neural networks are explicitly cited as examples of Blackbox algorithms because their complex internal workings are difficult to interpret.



Well Done!

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