

PONY

سلسلة كتب الأستاذ

Computer and

ICT

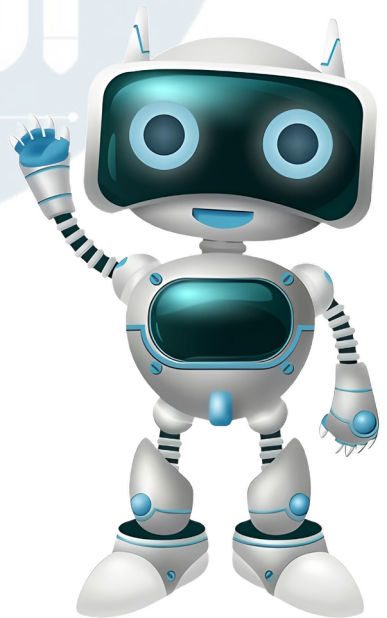
Monthly Revision of  
February and March

By

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2026



# Summary

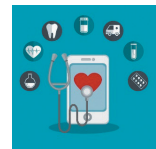
## of Chapter 2

### Lesson 1 Artificial Intelligence Applications

- » **Narrow AI:** It focuses on specific tasks, such as face recognition or language translation.
- » **General AI (GAI):** It can perform any human tasks, think, innovate, and adapt.
- » **Super AI (SAI):** It is the most advanced; it can solve complex problems and discover new things.

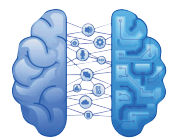
#### Key Points:

- » **Applications of AI in Daily Life:** سلسلة كتب  
  - 1 **Personal Assistant:** Like Siri or Alexa, They use AI to understand and perform commands.
  - 2 **Smart Games:** Video games use AI to make games fun and challenging.
  - 3 **Smart Cars:** Self-driving cars are enabled by AI.
  - 4 **Digital Doctors:** AI aids in faster and more accurate medical diagnoses. سلسلة كتب الاستاذ
  - 5 **Instant Translator:** AI translates languages in real-time.
  - 6 **Smart Shopping:** AI suggests products based on previous purchases.



- » **Fields of Artificial Intelligence:**

- 1 **Machine Learning:** AI learns from data and experiences.
- 2 **Natural Language Processing (NLP):** AI understands, interprets, and speaks human language.
- 3 **Computer Vision:** AI analyzes and understands visual information.





- ④ **Robotics:** AI-powered robots perform various tasks.
- ⑤ **Expert Systems:** AI solves complex problems and make decisions.
- ⑥ **Deep Learning:** AI learns complex tasks using neural networks.
- » **Creating Intelligent Models with Teachable Machine:**
  - **Teachable Machine:** It is a tool for creating models to recognize images, sounds, and movements.
  - **Model Building Training:** Teaching AI by showing it examples is similar to teaching a child.

## Lesson 2 Sensors

### Definition:

- » **Sensors:** They are devices that sense changes in the environment and convert them into signals for machines to understand and make decisions.

### Key Points:

#### » How Sensors Work:

- ① **Sensing:** They capture information (heat, light, and sound).
- ② **Signal Conversion:** They convert information into electrical signals.
- ③ **Transmission:** They send signals to display results or perform operations.

#### » Importance of Sensors for Robots:

- **Function:** Sensors act as the “senses” of robots, helping them see, hear, sense, and touch.

#### » Types of Robotic Sensors:

- ① **Distance Sensors:** They measure the distance to avoid collisions.
- ② **Light Sensors:** They adapt to changing light conditions.
- ③ **Sound Sensors:** They respond to voice commands.
- ④ **Motion Sensors:** They detect movement and direction changes.

**5 Special Sensors:** They measure temperature and humidity.

» **Examples of Devices Using Sensors:**

**1 Vacuum Cleaner Robot:** It avoids obstacles.

**2 Surgical Robot:** It uses precise sensors to perform surgeries.

**3 Self-Driving Cars:** They see the road and make decisions.

» **Types of Distance Sensors:**

**1 Ultrasonic Sensors:** They emit high-frequency sound waves to measure distance.

– **Examples:** Vacuum cleaner robots, parking systems, and fluid level measurement

**2 Laser Rangefinders:** They emit laser beams for high accuracy.

– **Examples:** 3D laser scanners, ground scanning systems, and industrial measurement

**3 Visible Light Sensors:** They use digital cameras to analyze images.

– **Examples:** Self-driving car cameras, industrial vision systems, and augmented reality systems

**4 Infrared Sensors:** They emit infrared rays, then receive the returning rays.

» They are widely used in consumer electronics.

– **Examples:** Remote controls, and non-contact thermometers

**5 Time of Flight Sensors:** They measure the light pulse travel time.

– **Examples:** 3D sensors, and motion tracking systems

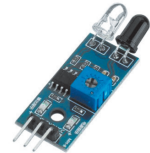
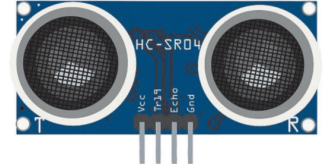
» **Factors for Choosing Sensors:**

**1 Required Range:** The maximum distance to measure

**2 Required Accuracy:** The measurement precision needed

**3 Operating Environment:** Conditions like lighting, temperature, and humidity.

**4 Cost:** Device and installation expenses.





## » Daily Applications of Sensors:

- 1 **Smartphones:** Taking pictures, adjusting lighting, determining locations
- 2 **Modern Cars:** Measuring speed, warning of collisions, assisting in parking
- 3 **Smart Homes:** Motion sensors for automatic lighting
- 4 **Phone Microphone:** Converting sound to electrical signals
- 5 **Motion Sensors in Games:** Detecting phone tilts
- 6 **Touch Screen:** Sensing finger touches

## Lesson 3 Robots

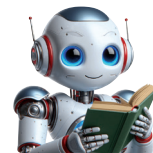
### Definition:

- » **Robot:** It is a device programmed to automatically perform specific tasks, capable of moving, sensing, and interacting with its surroundings.

### Key Points:

#### » Types of Robots:

- 1 **Industrial Robots:** They are used in factories for precise tasks, e.g., car production.
- 2 **Home Robots:** They are found in homes, e.g., Roomba for cleaning floors.
- 3 **Medical Robots:** They assist in surgeries with high accuracy.
- 4 **Educational Robots:** They are used in schools to teach programming, e.g., LEGO Mindstorms.



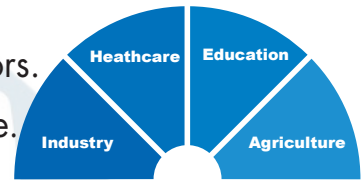
#### » Robot Components:

- 1 **Structure:** It is the main part carrying all components, made of materials like metal, plastic, or carbon.
- 2 **Sensors:** They are the senses of the robot, e.g., sound sensors and cameras.
- 3 **Motors:** They move parts of a robot, so it can move and execute commands, e.g., electric motors and pneumatic motors.

- 4 **Controller:** It is the “brain” of the robot, processes data and issues commands.
- 5 **Power Source:** It can be batteries, solar cells, or direct electrical power source.
- 6 **Software:** It makes the robot “smart,” includes algorithms for responses.
- 7 **Communication Tools:** They interact with users or other robots, e.g., Bluetooth and Wi-Fi.

### » Areas of Use of Robots:

- 1 **Industry:** They improve productivity, reducing errors.
- 2 **Healthcare:** They assist in surgeries and patient care.
- 3 **Education:** They provide interactive learning.
- 4 **Agriculture:** They are used in precision farming to increase crops and reduce waste.



### » Challenges:

- 1 **Safety:** The need to ensure the safety of robots during work.
- 2 **Employment:** Concerns that they can replace human labor.
- 3 **Ethics:** Impact on society.

### » Benefits:

- 1 **Increased Efficiency and Productivity:** They can do continuous work without fatigue or interruption.
- 2 **High Accuracy and Reduced Errors:** They are precise in tasks, like surgeries and electronics assembly.
- 3 **Safety and Security:** They can perform dangerous tasks and handle heavy weights and hazardous materials.
- 4 **Adaptability and Diversity:** They perform various tasks efficiently. Ex: home robots and educational robots
- 5 **Reduced Costs:** They provide long-term cost savings by reducing human labor or errors, and achieving accuracy.
- 6 **Contributing to Development:** They encourage technological advancements, e.g., space exploration and medical research.



## Lesson 4 Scratch

### Definition:

- » **Scratch Program:** It is a visual and easy-to-use educational tool for learning programming through games, animations, music, and more.



### Key Points:

#### » Scratch Program Features:

- 1 **Simple Interface:** It uses and orders visual blocks to form programs.
- 2 **Educational:** It is designed to teach basic programming concepts in a fun way.
- 3 **Free:** It is available for download from its official website for free.
- 4 **Creative Thinking:** It develops skills in creative thinking and problem-solving.
- 5 **Problem-solving Skills:** It solves problems in a logical way.
- 6 **Collaboration:** It enhances teamwork skills.
- 7 **Foundation:** It provides a strong start for learning more complex programming languages.
- 8 **Sharing:** Its projects can be shared with others.



#### » Program Interface:

- **Menu Bar**
- **Command Blocks Area**
- **Script Area:** It collects programming sections.
- **Stage Area:** It shows project results.
- **Sprite Object**
- **Sprites Area:** It contains the project's objects.

#### » Coordinates:

- **Determine Coordinates:** X=..... (horizontal), Y=..... (vertical)
- **Change Coordinates:** Drag and drop the sprite to a new position.

### » Implement the project:

- To execute the project, click on the icon .
- To stop the execution of the project, click on the icon .

### » Saving the Project:

- File Menu: Choose "Save to your computer".
- The file extension is **Sb3**.

## Lesson 5 Sprites Area in Scratch

### Definition:

» **Sprites Area:** It contains the sprites used in the project.

### Key Points:

#### » Sprites Area Features:

- 1 **Name:** It is modified by clicking and renaming.
- 2 **Location:** It determines the sprite's position (X, Y values).
- 3 **Direction:** It changes the sprite's movement direction.
- 4 **Visibility:** It shows or hides the sprite.
- 5 **Size:** It changes the sprite's size.
- 6 **Delete:** It removes the sprite.
- 7 **Add:** It is used to choose a new sprite.

#### » Adding a New Sprite:

- Choose Sprite: Select Basketball.
- Remove: Delete the cat sprite.

#### » Project 2: Moving the Ball

- **Objective:** To move the ball randomly, make a sound, repeat 10 times.

#### » Steps:

- 1 **Motion:** Choose "Go to random position".
- 2 **Sound:** Choose "Play sound".
- 3 **Control:** Choose the "Repeat" command.
- 4 **Events:** Choose the "When Clicked" command.



### »» Project 3: Spaceship

– **Objective:** To move a spaceship randomly, make a sound, change size, repeat 5 times, start from (0, 0).

– **Steps:**

- 1 **Insert Sprite:** Add Rocketship.
- 2 **Remove:** Delete the cat sprite.
- 3 **Background:** Choose "Space".

### »» Square Drawing Project:

- 1 **Open Project:** Start a new project.
- 2 **Select Pen:** Drag the "pen" block to start drawing.
- 3 **Set Color and Size:** Use "Set Pen Color to" and "Set Pen Size to" blocks.
- 4 **Move the Pen:** Use "Go to x:y:" blocks to draw lines.
- 5 **Repeat the Steps:** Draw more lines to form shapes.

### »» Drawing a circle:

»» Use the "Repeat" block to repeat the process of drawing short lines at different angles.





### »» Notes:

- 1 **Drawing Shapes:** Set start and end points for lines.
- 2 **Adding Details:** Add features like eyes, mouth, and ears.







- 4 Robots assist in dangerous tasks such as ..... .
  - a. handling hazardous chemicals
  - b. handling heavy weights
  - c. cleaning the house
  - d. both a and b
- 5 Scratch helps students ..... .
  - a. make remote controls
  - b. learn the principles of programming
  - c. 3D scanning
  - d. all of them
- 6 The "Sprite" in Scratch represents a/an ..... .
  - a. background
  - b. object or character
  - c. command block
  - d. none of them
- 7 To execute the project, click on the icon ..... .
  - a. 
  - b. 
  - c. 
  - d. 
- 8 ..... is the main part that carries all the components of the robot.
  - a. Motor
  - b. Structure
  - c. Sensor
  - d. Controller

## Model Exam

2

### 1 Put (✓) or (X):

- 1 Artificial intelligence is a branch of computer science. ( )
- 2 Light sensors are useful in underwater environments. ( )
- 3 Light sensors helps cars determine the distance to other vehicles. ( )
- 4 Robots are limited to working in factories only. ( )
- 5 The Scratch program helps students learn the basics of programming. ( )
- 6 To save project from the list File choose Save to your computer. ( )
- 7 Smart home lighting system it uses sensors to turn on the lights when someone enters the room. ( )

## 2 Choose the correct answer:

- 1 ..... Like Siri or Alexa uses artificial intelligence to understand and execute your commands:
  - a. A personal assistant.
  - b. Interpreter.
  - c. Smart Shopping.
  - d. Natural language.
- 2 From The common applications For sensors Using Infrared rays in .....
  - a. Smartphones.
  - b. Remote controls.
  - c. Vacuum cleaners.
  - d. 3D scanning.
- 3 ..... devices capture information from the surrounding environment and convert it into electrical signals.
  - a. Sensors
  - b. Strings
  - c. Touch Screen
  - d. Robotic Arm
- 4 In production lines, robots can perform repetitive tasks accurately which leads to .....
  - a. slow production
  - b. decreased efficiency
  - c. increased efficiency and productivity
  - d. lack of development
- 5 The sprites used in a Scratch project appear in the ..... area.
  - a. Sensors
  - b. Bluetooth
  - c. Strings
  - d. Sprites
- 6 In Scratch, to add a new object, press on .....
  - a. Start
  - b. Choose Sprite
  - c. Rename Sprite
  - d. none of them
- 7 A power source for robots is the:
  - a. sensor
  - b. motor
  - c. batteries
  - d. software
- 8 The smart vacuum cleaner is a type of ..... robot used for floor cleaning.
  - a. industrial
  - b. home
  - c. agricultural
  - d. medical

# Model Exam

## 3

### 1 Put (✓) or (X):

- 1 Artificial intelligence is only one type. ( )
- 2 Laser distance sensors are considered accurate because they Use Laser beams. ( )
- 3 Motors used in robots are Electric motors and pneumatic motors. ( )
- 4 Scratch is considered a difficult-to-use educational tool. ( )
- 5 Scratch offers a very wide range of programming ideas. ( )
- 6 Robots do not need to use software in their work. ( )
- 7 To be able to move the object, we use the Motion Blocks from the Area Blocks. ( )
- 8 Robots can improve productivity and reduce human errors in industry. ( )

### 2 Choose the correct answer:

- 1 The X and Y values in Scratch represent the ..... .
  - a. size of the sprite
  - b. direction of the sprite
  - c. location of the sprite
  - d. color of the sprite
- 2 In scratch, result of the work or project appears in the ..... area.
  - a. Programming Script Area.
  - b. Stage area
  - c. Blocks area.
  - d. Creatures Sprites.
- 3 ..... is an example of General Artificial Intelligence (GAI).
  - a. A chess-playing robot
  - b. A robot that mimics humans
  - c. Siri
  - d. None of the previous
- 4 The first step in the operation of the sensor is ..... .
  - a. Transmitting
  - b. Sensing
  - c. Transduction

- 5 The file extension for a Scratch project is ..... .
  - a. Docx
  - b. Sb3
  - c. bmp
  - d. Jpg
- 6 You can save a Teachable Machine project on:
  - a. Google Drive
  - b. your device
  - c. both a and b
  - d. none of them
- 7 ..... is an educational tool that allows learning the basics of programming in a fun and engaging way.
  - a. Artificial Intelligence
  - b. Scratch
  - c. Python
  - d. A robot



**Model Exam**

**4**

**1 Put (✓) or (X):**

- 1 Artificial intelligence can help doctors diagnose diseases. ( )
- 2 Medical robots help doctors perform surgeries. ( )
- 3 Scratch is paid software. ( )
- 4 To Change location of the object Sprite on the platform Double-click on it. ( )
- 5 Motion sensors detect movement and changes in direction. ( )

**2 Choose the correct answer:**

- 1 The "Pen" extension is added by clicking on ..... .
  - a. Choose Sprite
  - b. Add Extension
  - c. Delete Sprite
  - d. Change Backdrop
- 2 To stop the project, click on the icon:
  - a. 
  - b. 
  - c. Sprite
  - d. Stage



## Model Exam

### 5

#### 1 Put (✓) or (X):

- 1 Artificial intelligence is used only in the video game industry. ( )
- 2 Control unit processes data collected by the sensors and Commands are issued to the engines. ( )
- 3 In the Scratch program the code displays in the stage area. ( )
- 4 In order to move the object we use the group Motion from Command Groups Area and select Blocks Area. ( )
- 5 To display "Hello" on the platform, From the Looks category, select the command: say "Hello. ( )

#### 2 Choose the correct answer: سلسلة

- 1 A new background for the project is inserted by pressing ..... .
  - a. Script Area
  - b. Stage
  - c. Choose Sprite
  - d. Choose a Backdrop
- 2 If the movement of sprite is done quickly, the command used is ..... from Control Blocks:
  - a. Wait.
  - b. Repeat.
  - c. Forever.
  - d. Else.
- 3 ..... is a branch of computer science.
  - a. Scratch
  - b. string
  - c. Artificial intelligence
  - d. motors
- 4 In which environment are light sensors useful ?
  - a. In dark rooms
  - b. In noisy factories
  - c. In places with variable lighting conditions
  - d. In underwater environments

5 ..... is a field of AI that involves learning from mistakes.

- a. Machine Learning
- b. Natural Language Processing
- c. Computer Vision
- d. Robotics

### 3 Complete the Following Statements:

1 ..... focuses on specific tasks, such as face recognition or language translation

2 The ..... is the "brain" of the robot.

3 The file extension for Scratch projects is .....

4 ..... sensors detect movement and changes in directions.

5 .....artificial intelligence can solve problems that are difficult for humans to solve easily and discover new things we never imagined before.



# Answers

## MODEL (1)

- 1 1 X 2 ✓ 3 X 4 ✓  
5 X 6 X 7 ✓

- 2 1 c 2 b 3 c 4 d  
5 b 6 b 7 d 8 b

## MODEL (2)

- 1 1 ✓ 2 X 3 X 4 X  
5 ✓ 6 ✓ 7 ✓

- 2 1 a 2 b 3 a 4 c  
5 d 6 b 7 c 8 b

## MODEL (3)

- 1 1 X 2 ✓ 3 ✓ 4 X  
5 ✓ 6 X 7 ✓ 8 ✓

- 2 1 c 2 b 3 b 4 b  
5 b 6 c 7 b

## MODEL (4)

- 1 1 ✓ 2 ✓ 3 X  
4 X 5 ✓

- 2 1 b 2 b 3 b  
4 b 5 a

- 3 1 Infrared  
2 Teachable Machine  
3 Home 4 GAI  
5 Neural networks

## MODEL (5)

- 1 1 X 2 ✓ 3 X  
4 ✓ 5 ✓

- 2 1 d 2 a 3 c  
4 c 5 a

- 3 1 Narrow AI 2 controller  
3 sb3 4 Motion  
5 Super

تطبيق



مذكرات جاهزة للطباعة

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