

## 1. Robotics with AI



### ROBO CHECK

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|----|----------------|-----------------|---------------------------------|----------|---------|
| A. | 1. (ii)        | 2. (iii)        | 3. (i)                          | 4. (iii) | 5. (iv) |
| B. | 1. F           | 2. T            | 3. F                            | 4. T     | 5. T    |
| C. | 1. Electrical  | 2. Think        | 3. Artificial Intelligence (AI) |          |         |
|    | 4. Environment | 5. Cognitive AI |                                 |          |         |

### COMPETENCY-BASED QUESTIONS

- Cognitive AI
- Sensors

#### CASE STUDY

- Household chores HomeBot is designed to assist with vacuuming, dusting and cooking
- Challenges HomeBot faces in its operation are:
  - Difficulty in navigating unfamiliar spaces
  - Possibility of malfunctioning when there are too many obstacles in the way

## 2. Introduction to Sensors in Tinkercad



### ROBO CHECK

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|----|------------------|-------------|-------------|---------------|--------|
| A. | 1. (iii)         | 2. (ii)     | 3. (iv)     | 4. (iii)      | 5. (i) |
| B. | 1. T             | 2. T        | 3. F        | 4. T          | 5. F   |
| C. | 1. Photoresistor | 2. Circuits | 3. Interact | 4. Photodiode |        |
|    | 5. Conversion    |             |             |               |        |

## COMPETENCY-BASED QUESTIONS

1. Soil moisture sensor
2. PIR sensor

### 3. Getting Started with Arduino in Tinkercad



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|----|------------|-----------------|---------|--------------|------------|
| A. | 1. (iii)   | 2. (ii)         | 3. (i)  | 4. (iii)     | 5. (i)     |
| B. | 1. T       | 2. T            | 3. F    | 4. F         | 5. T       |
| C. | 1. Arduino | 2. Piezo Buzzer | 3. Text | 4. Variables | 5. Sensors |

## COMPETENCY-BASED QUESTIONS

1. Blocks mode
2. Comparison block

### 4. Getting Started with VEXcode VR



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|----|---------------|----------|-----------|---------------|------------|
| A. | 1. (i)        | 2. (ii)  | 3. (iii)  | 4. (i)        | 5. (iii)   |
| B. | 1. VEXcode VR | 2. Robot | 3. Blocks | 4. Drivetrain | 5. Drawing |
| C. | 1. T          | 2. F     | 3. F      | 4. T          | 5. T       |

## COMPETENCY-BASED QUESTIONS

1. Ritika forgot to add drawing blocks.
2. Arjun should use sensing blocks.



# 5. Introduction to Industry 5.0 in Robotics



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|----|--------------|--------------|-----------|---------------|------------|
| A. | 1. (ii)      | 2. (iv)      | 3. (iii)  | 4. (ii)       | 5. (iii)   |
| B. | 1. T         | 2. F         | 3. F      | 4. F          | 5. T       |
| C. | 1. Precision | 2. Hazardous | 3. Robots | 4. E-commerce | 5. Privacy |

## COMPETENCY-BASED QUESTIONS

1. Skills gap
2. E-commerce

### CASE STUDY

1. Industry 5.0 enables personalised production in fashion by integrating AI-powered robots with human creativity. Customers can choose fabric, colour, and size online, and robots use these inputs to automatically cut and stitch garments. This allows for highly customised clothing tailored to individual preferences, while maintaining the efficiency and precision of automated systems.
2. The combination of human creativity and AI robots offers several advantages:
  - Precision and efficiency
  - Personalisation
  - Reduced Material Waste
  - Faster Delivery
3. The limitations are:
  - High installation and maintenance costs
  - Continuous software updates
  - Limited resources

