

BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Question Bank for UT -II

Sub-ET M (315363)

Course- ME5K

Unit – III

Autonomous Vehicles

- 1) Which of the following sensors are best suited for windy, fog weather conditions in your SDV?
 - a) **RADAR**
 - b) LIDAR
 - c) Depth Camera
 - d) Tracking Camera
- 2) Which of the following sensor is considered as passive?
 - a) RADAR
 - b) LIDAR
 - c) **Camera**
 - d) Ultrasonic Sensor
- 3) Which of the following is not a commonly used application of RADARS?
 - a) Adaptive cruise control
 - b) Blind spot monitoring
 - c) Lane Change Assistance
 - d) **Parking Assistance**
- 4) Sensors that measure a vehicle's internal state are called as
 - a) Interceptive sensors
 - b) Extroceptive sensors
 - c) **Proprioceptive sensors**
 - d) Peroceptive sensors
- 5) **Which of the following is a major type of sensor used by autonomous vehicles to "see" their surroundings?**
 - a) **Radio telescope**
 - b) **LIDAR**
 - c) **Barometers**
 - d) Sonar
- 6) What is the primary technology used in autonomous vehicles for navigation?
 - a) LIDAR
 - b) RADAR
 - c) GPS
 - d) **All of the above**

- 7) Which of the following is a key component of an autonomous vehicle's perception system?
- a) **Cameras**
 - b) Microcontrollers
 - c) Batteries
 - d) Wheels
- 8) What does the term 'Level 5' indicate in the context of autonomous vehicles?
- a) **Full automation**
 - b) No automation
 - c) Partial automation
 - d) Driver assistance
- 9) Which technology helps in the detection of pedestrians and obstacles in the path of an autonomous vehicle?
- a) Machine Learning
 - b) Computer vision
 - c) Artificial Intelligence
 - d) **All of the above**
- 10) What role does Artificial Intelligence play in autonomous vehicles?
- a) Routing
 - b) Decision making
 - c) Obstacle detection
 - d) **All of the above**
- 11) What does Doppler radar measure in order to determine the velocity?
- a) Doppler amplitude
 - b) **Doppler Shift**
 - c) Change in position
 - d) Wave phase
- 12) On what basis we can differentiate between level 2 and level 3 vehicles?
- a) Longitudinal control
 - b) **Driving Environment Monitoring**
 - c) Fallback Situation Control
 - d) System Capability

Unit - IV

Recent Trends in Maintenance

- 1) The main goal of Autonomous Maintenance (AM) is _____
 - A) To increase the level of maintenance personnel
 - B) To reduce equipment downtime by empowering operators to perform maintenance tasks**
 - C) To replace operators with automated systems
 - D) To eliminate the need for preventive maintenance

- 2)] _____ maintenance approach that empowers operators to take ownership of routine maintenance tasks, allowing them to perform tasks freely
 - A) Preventive
 - B) Predictive
 - C) Autonomous**
 - D) Automated

- 3) Continuous improvement in equipment and processes is covered under _____ pillar of TPM.
 - A) Autonomous Maintenance (Jishu Hozen)
 - B) Focused Improvement (Kobetsu Kaizen)**
 - C) Quality Maintenance
 - D) Preventive Maintenance

- 4) The principles typically associated with Autonomous Maintenance include
 - A) Task delegation to specialized technicians
 - B) Equipment breakdown as a key focus
 - C) Operator involvement in daily maintenance activities**
 - D) Minimizing the need for training and skill development

- 5) The supervisor in the gear section wishes to apply autonomous maintenance. He should focus on ----- step
 - A) Monitoring the equipment continuously
 - B) Defining roles and responsibilities
 - C) Training operators on equipment maintenance**

D) Standardizing maintenance procedures

6) _____ is a maintenance approach that equilibrates economic, social, and environmental considerations to achieve sustainable development and minimize undesirable impacts on the environment.

A) Preventive Maintenance

B) Sustainable Maintenance

C) Autonomous Maintenance

D) Automated Maintenance

7) _____ of the following benefits does Autonomous Maintenance provide.

A) Increased equipment failures

B) Reduced involvement of operators in machine-related issues

C) Improved equipment reliability and longer machine life

D) Greater dependency on external contractors

8) Sustainable maintenance can lead to_____.

A) Cost savings through reduced downtime,

B) Lower energy consumption, and

C) Increased asset utilization

D) All of the above

9) Select maintenance in which plant-based biodegradable or recyclable oils and coolants are recommended

A) Preventive Maintenance

B) Sustainable Maintenance

C) Autonomous Maintenance

D) Automated Maintenance

10) Select the maintenance type having focuses on reliability and performance to minimize maintenance needs

A) Preventive Maintenance

B) Sustainable Maintenance

C) Autonomous Maintenance

D) Reliability-centered maintenance

11) Data analytics plays a crucial role in _____ maintenance by enabling the identification of patterns and anomalies in equipment data

A) Preventive

B) Predictive

C) Autonomous

D) Automated

12) Data analytics plays a crucial role in predictive maintenance by

A) Enabling the identification of patterns and anomalies in equipment data,

B) Allowing for proactive maintenance and

C) Preventing costly breakdowns

D) All of the above

Unit 5.

Recent Trends in Agricultural Engineering

- 1) The role of AI and machine learning tools in agriculture is -----
 - A) Predicting optimal planting times and detecting potential risks from pests.**
 - B) Monitoring livestock health and managing crop logistics.
 - C) Analysing soil composition and irrigation requirements.
 - D) Enhancing weather forecasting for farming.

- 2) Automated systems in agriculture help in optimizing
 - A) Water usage,
 - B) Monitor soil conditions,
 - C) Reduce the environmental impact of farming.
 - D) All of the above**

- 3) Agricultural automation plays a crucial role in tasks such as
 - A) Land preparation,
 - B) Irrigation,
 - C) Crop monitoring
 - D) All of the above**

- 4) As a part of Agricultural Robotics and Automation Projects in India, the following is one of the Farm management software
 - A) Farm ERP**
 - B) Kisan Drone
 - C) Bharat Rohan
 - D) None of the above

- 5) Harvesting is one of the most labour-intensive processes in agriculture, requiring ----- to avoid crop damage.
 - A) Precision,
 - B) Speed, and
 - C) Care
 - D) All of the above**

6) One of the following type of robots monitor crop conditions and independently apply fertilizers in agriculture

A) Flying Robots

B) Fruit Picking Robots

C) Cattle Grazing Robots

D) Robot Drones

7) Autonomous machines that thresh, winnow, and collect grains from crops such as wheat and rice are known as

A) Grain Harvesting Robots

B) Grape Harvesting Robots

C) Fruit-Picking Robots

D) None of the above

8) These robots measure moisture levels, nutrient content, and soil composition to optimize irrigation and fertilizer use.

A) Aerial Drones for Crop Health Monitoring

B) Ground-Based Monitoring Robots

C) Disease and Pest Detection Robots

D) Soil and Irrigation Monitoring Robots

9) Pneumatic Planters usestechnology to distribute seeds evenly.

A) Air pressure

B) Water pressure

C) Oil pressure

D) All of the above

10) The benefit of an AI-operated irrigation System is -----

A) Water Conservation

B) increased Crop Yield

C) Climate Adaptation

D) All of the above

11) LIDAR full form is -----

A) Light Detection and Ranging

B) Light Amplification and Ranging

C) Light Dimmer and Ranging

D) None of the above

12) Autonomous tractors can be equipped with different attachments for

A) Plowing,

B) Seeding,

C) Fertilizing

D) All of the above