Seat No -

Total number of questions : 60

11363_Artificial Intelligence and Robotics

Time : 1hr

Max Marks : 50

N.B

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Q.no 1. Classification of data points is a technique of

A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 2. What is the evaluation function in greedy approach?

A : Heuristic function

B : Path cost from start node to current node

C : Path cost from start node to current node + Heuristic cost

D : Average of Path cost from start node to current node and Heuristic cost

Q.no 3. Which of the following branch is not a parts of robotics?

A : Computer Engineering

B : Mechanical Engineering

C : Electrical Engineering

D : Chemical Engineering

Q.no 4. The sensor that sends out sound pulses called pings, then receives the returning sound echo is called

A : Active Sonar

B : Passive Sonar

C : Radar

D : Laser Rangefinder

Q.no 5. what is HDOP

A : Horizantal geometric dilution of position

B : Horizantal geometric dilution of precision

C : Vertical geometric dilution of precision

D : Vertical geometric dilution of position

Q.no 6. Which of the following is an example of infrared sensor?

A : Thermometer

B : Accelerometer

C : Gyroscope

D : TV Remote

Q.no 7. Which of the following sensor work based on sound navigation ranging?

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C : Efficient performance

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A : Contact Sensor

B : Inertial Sensor

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D : Biosensor

Q.no 12. What is Global Hawk

A : Atonomous aircraft

B : Aircraft

C : Airoplan

D : Robot

Q.no 13. Natural or artificial can be category of

A : Localization

B : Landmarks classes

C : Pose evalution

D : Robot

Q.no 14. What is AGV

A : Automated guided Vehical

B : Automated grid Vehical

C : Automated grid Van

D : Automatic guided Vehical

Q.no 15. A device that is used to detect event or changes in the environment is called

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 16. SONAR is example of

A : Video sensing

B : GPS

C : Robot

D : Machine

Q.no 17. Which is type of Robotics Perception

A : Map related

B : Path related

C : Position related

D : Edge related

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A : For robotics, you should have a knowledge of different sensors

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C : For robotics, you may have to use actuators

D : For robotics, you do not require help of computer engineers, mechanical engineers and electrical engineers

Q.no 19. Which of the following is not advantage of robotics?

A : Greater flexibility and re-programmability

B : Greater response time to inputs than human

C : Greater unemployment

D : Improved product quality

Q.no 20. Which of the following branch process with sensory feedback in robotics?

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C : Electrical Engineering

D : Electronics Engineering

Q.no 21. Best-First search can be implemented using the following data structure

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B : Stack

C : Priority Queue

D : Circular Queue

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A : Existance Kalman filter

B : Extended Klaman Filter

C : Each Kalman filter

D : Evalution Kalman Filter

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B : Radar

C : Intertial

D : Biosensor

Q.no 25. What is the name of algorithm in which a loop that continually moves in the direction of increasing value – that is uphill

A : Up-Hill Search

B : Hill-Climbing

C : Hill algorithm

D : Platue climbing valley

Q.no 26. Which of the following is the component of machine that is responsible for controlling a mechanism system?

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 27. A computer software that provide the services to software applications beyond those available from the operating system is called

A : Sensor

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D : Transducer

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A : Evaluating existing location

B : Evaluating Previous location

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C : Stanford University

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B : Sonar

C : Laser Rangefinder

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B : Landmarks classes

C : Robot

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Q.no 36. Which of the following is NOT one of the advantages associated with a robotics implementation program?

A : Low costs for hardware and software

B : Robots work continuously around the clock

C : Quality of manufactured goods can be improved

D : Reduced company cost for worker fringe benefits

Q.no 37. Sensor based servoing associate with

A : Robot pose

B : Robot action

C : Robot position

D : Robat path

Q.no 38. Why do the robot need sensor?

A : To collect information from environment

B : To map environment atribute to a quantitative measurement

C : only option 1 is true

D : Both option 1 and 2 are true

Q.no 39. The device that is used to convert energy from one form to another is called

A : Emiter

B : Transducer

C : Transmitter

D : Receiver

Q.no 40. Which of the following is true?

A : Robot minimize the labor cost

B : Robot minimize the productivity

C : Robot minimize the life of production machine

D : Rotot minimize the qualtiy of work

Q.no 41. Which is mode of mining

A : Close pit mining

B : Mining

C : Pit Mining

D : Underground Mining

Q.no 42. Which is type of Robotics Perception

A : Marker related

B : Map related

C : Path related

D : Position related

Q.no 43. Which is fundamental approache of mapping

A : Mapping without localization

B : Sensorial maps

C : Perceptul maps

D : Geomatric Maps

Q.no 44. Which localization does not requre any previous informatiom

A : Absolute

B : Local

C : Global

D : Passive

Q.no 45. Whai is necessity for a lot of sensible mobile robotics funaction

A : Map discovery

B : Geomatric Maps

C : Perceptul maps

D : Sensorial maps

Q.no 46. If something is open or closed in the system then it is informed by followoing sensor.

A : Contact Sensor

B : Inertial Sensor

C : Sonar Sensor

D : Biosensor

Q.no 47. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

A : hydraulics involves the compression of liquids

B : hydraulics involves the compression of air

C : pneumatic involves the compression of air

D : chemical batteries produce AC power

Q.no 48. Which of the following is an example of inertia sensor?

A : Thermometer

B : Accelerometer

C : Touch screen

D : TV Remote

Q.no 49. Which of the following is an example of contact sensor?

A : Thermometer

B : Accelerometer

C : Gyroscope

D : TV Remote

Q.no 50. Which of the following sensor is used to monitor the motor activities?

A : Contact Sensor

B : Inertial Sensor

C : Infrared Sensor

D : Biosensor

Q.no 51. Industrial Robots are generally to designed to carry which of the following coordinate system(s).

A : Cartesian coordinate systems

B : Polar systems.

C : Cylindrical systems

D : Sperical Sytem

Q.no 52. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?

A : Three

B : Four

C : Six

D : Eight

Q.no 53. Radial movement (in & out) to the manipulator arm is provided by

A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 54. Which of the following robotic control paradigm make use of planning?

A : Horizontal and Vertical

B : Vertical and Hybrid

C : Horizontal and Hybrid

D : Horizontal, Vertical and Hybrid

Q.no 55. Which of the following is the serial robot?

A : Commercial robot

B : Industrial robot

C : In-house robot

D : Mobile Robot

Q.no 56. A clearly different group of maps showing particular application to robots is called as

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C : Perceptul maps

D : Geomatric Maps

Q.no 57. The Robot designed with Cylindrical coordinate system has

A : A Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

D : Two rotational & one liner movement

Q.no 58. The Robot designed with Polar coordinate system has

A : Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

D : Two rotational & one liner movement

Q.no 59. Which of the following work is done by General purpose Robot?

A : Part drive

B : Welding

C : Spray picking

D : Part panting

Q.no 60. The number of moveable joints in the base, the arm, and the end effectors of the robot determines

A : degrees of freedom

B : payload capacity

C : operational limits

D : flexibility

Answer for Question No 1. is a

Answer for Question No 2. is a

Answer for Question No 3. is d

Answer for Question No 4. is a

Answer for Question No 5. is b

Answer for Question No 6. is d

Answer for Question No 7. is a

Answer for Question No 8. is c

Answer for Question No 9. is a

Answer for Question No 10. is d

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Answer for Question No 13. is b

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Answer for Question No 19. is c

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Answer for Question No 25. is b

Answer for Question No 26. is c

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Answer for Question No 28. is a

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Answer for Question No 33. is a

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Answer for Question No 36. is a

Answer for Question No 37. is a

Answer for Question No 38. is d

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Answer for Question No 41. is d

Answer for Question No 42. is a

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Answer for Question No 44. is c

Answer for Question No 45. is a

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B : Radar

C : Intertial

D : Biosensor

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A : Contact Sensor

B : Inertial Sensors

C : Infrared Sensor

D : Laser Rangefinder

Q.no 3. Which of the following sensor make use of light emitting diode?

A : Sonar

B : Radar

C : Infrared

D : Laser Rangefinder

Q.no 4. What is GPS

A : Global Positioning system

B : Global Point System

C : Global System

D : Global path System

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A : Performance

B : Capability

C : Direction

D : Measurements

Q.no 6. What is AGV

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Q.no 14. Which of the following search strategy uses a problem specific knowledge

A : uninformed Search

B : Breadth-First-Search

C : Heuristic Search

D : Best search

Q.no 15. Weighted voting of correction vectors is a technique of

A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 16. Best-First search is a type of informed search, which of the following principle used to choose the best next node for expansion

A : Evaluation function returning lowest evaluation

B : Evaluation function returning highest evaluation

C : Evaluation function returning lowest & highest evaluation

D : no evaluation function

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A : Laser Rangefinder

B : Radar

C : Smart Camera

D : Sonar

Q.no 21. Who work on space Robotics mission

A : Soviet

B : IBM

C : Google

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A : Lowest path cost

B : Cheapest path from root to goal node

C : Average path cost

D : Estimated cost of cheapest path from root to goal node

Q.no 28. If a robot can alter its own trajectory in response to external conditions it is considered to be

A : Intelligent

B : Mobile

C : Open loop

D : Non-servo

Q.no 29. In a rule-based system procedural domain knowledge is in the form of

A : Production rules

B : Rule interpreters

C : Meta-rules

D : control rules

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B : IBM

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B : Passive Sonar

C : Radar

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A : Similar power drive technology is used in both

B : Different feedback systems are used in both

C : Programming is same for both

D : Programming is not same for both

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B : Industrial robot

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D : Mobile Robot

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A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

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A : Sensing

B : Sensing and Planning

C : Sensing and Acting

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A : Relational maps

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D : Geomatric Maps

Q.no 56. Robot is derived from Czech word

A : Rabota

B : Robota

C : Rebota

D : Ribota

Q.no 57. Artificial landmarks positioned exclusively for the functions of

A : Robot localization

B : Global localization

C : Path finding

D : Approximation location

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A : A Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

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B : Controller

C : Sensors

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A : Video sensing

B : GPS

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D : Machine

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C : Depth-First –Search

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B : Radar

C : Smart Camera

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B : Convoy system

C : Convoy assistant

D : Automatic guided Vehical

Q.no 12. What is the name of algorithm in which a loop that continually moves in the direction of increasing value – that is uphill

A : Up-Hill Search

B : Hill-Climbing

C : Hill algorithm

D : Platue climbing valley

Q.no 13. what is GDOP

A : Geometric dilution of position

B : Geometric dilution of precision

C : Geometric dilution of path

D : Geometric dilution of pointer

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B : Automated grid Vehical

C : Automated grid Van

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B : Capability

C : Direction

D : Measurements

Q.no 17. Who work on space Robotics mission

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B : IBM

C : Google

D : Yahoo

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A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 19. Which of the following branch is not a parts of robotics?

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B : Mechanical Engineering

C : Electrical Engineering

D : Chemical Engineering

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B : Accelerometer

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B : Variable sequence robot

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D : Numerical Control robot

Q.no 28. Whai is necessity for a lot of sensible mobile robotics funaction

A : Map discovery

B : Geomatric Maps

C : Perceptul maps

D : Sensorial maps

Q.no 29. Servoing is generally used to enable

A : Path

B : Position

C : Robot

D : Diraction

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Q.no 35. Triagulation is a technique associate with

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B : Landmarks classes

C : Robot

D : Odometry

Q.no 36. The original LISP machines produced by both LMI and Symbolics were based on research performed at

A : CMU

B : MIT

C : Stanford University

D : RAMD

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Q.no 40. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

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Q.no 42. The device that is used to convert energy from one form to another is called

A : Emiter

B : Transducer

C : Transmitter

D : Receiver

Q.no 43. Which of the following statements concerning the implementation of robotic systems is correct?

A : implementation of robots CAN not save existing jobs

B : implementation of robots CAN not create new jobs

C : robotics could prevent a business from closing

D : robotics could noy prevent a business from closing

Q.no 44. Which of the following sensor is used to monitor the motor activities?

A : Contact Sensor

B : Inertial Sensor

C : Infrared Sensor

D : Biosensor

Q.no 45. Which of the following sensor is not used to measure the distance?

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A : Production rules

B : Rule interpreters

C : Meta-rules

D : control rules

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A : Evaluating existing location

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Q.no 49. A computer software that provide the services to software applications beyond those available from the operating system is called

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Q.no 50. To measure heat of an object which of the following sensor is used?

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B : Radar

C : Infrared

D : Laser Rangefinder

Q.no 51. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?

A : Three

B : Four

C : Six

D : Eight

Q.no 52. The Vertical decomposition of the robotic control system is based on

A : Sensing

B : Sensing and Planning

C : Sensing and Acting

D : Sensing, Planning and Acting

Q.no 53. Which of the following robotic control paradigm make use of planning?

A : Horizontal and Vertical

B : Vertical and Hybrid

C : Horizontal and Hybrid

D : Horizontal, Vertical and Hybrid

Q.no 54. Which of the following work is done by General purpose Robot?

A : Part drive

B : Welding

C : Spray picking

D : Part panting

Q.no 55. What is the name for space inside which a robot unit operates?

A : Environment

B : Spatial base

C : Work envelop

D : Exclusion zone

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A : Side-side-side

B : Side-angle-side

C : Both a&b

D : Side-by-side

Q.no 57. PROLOG is an AI programming language which solves problems with a form of symbolic logic known as predicate calculus. It was developed in 1972 at the University of Marseilles by a team of specialists. Can you name the person who headed this team?

A : Alain colmerauer

B : Niklaus Wirth

C : Seymour papert

D : John McCarthy

Q.no 58. Which of the basic parts of a robot unit would include the computer circuitry that could be programmed to determine what the robot would do?

A : Sensor

B : Controller

C : Arm

D : End effector

Q.no 59. The horizontal decomposition of robotic control system is based on

A : Sensing

B : Sensing and Planning

C : Sensing and Acting

D : Sensing, Planning and Acting

Q.no 60. When will Hill-Climbing algorithm terminate?

A : Stopping criterion met

B : Global Min/Max is achieved

C : No neighbour has higher value

D : no criteria to terminate

Answer for Question No 1. is c

Answer for Question No 2. is a

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Answer for Question No 20. is d

Answer for Question No 21. is a

Answer for Question No 22. is a

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Answer for Question No 25. is a

Answer for Question No 26. is a

Answer for Question No 27. is a

Answer for Question No 28. is a

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11363_Artificial Intelligence and Robotics

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B : Radar

C : Smart Camera

D : Sonar

Q.no 9. Which of the following sensor work based on radio detection and ranging?

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B : Radar

C : Intertial

D : Biosensor

Q.no 10. The sensor that requires physical touch of an object is called

A : Contact Sensor

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Q.no 22. Which sensor is used in today's mobile phone screen?

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Q.no 23. What is the evaluation function in greedy approach?

A : Heuristic function

B : Path cost from start node to current node

C : Path cost from start node to current node + Heuristic cost

D : Average of Path cost from start node to current node and Heuristic cost

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A : Absolute

B : Local

C : Global

D : Passive

Q.no 30. If a robot can alter its own trajectory in response to external conditions it is considered to be

A : Intelligent

B : Mobile

C : Open loop

D : Non-servo

Q.no 31. Natural Enviroment are not particularly organized or skilled for

A : Machines

B : Robots

C : Path finding

D : Odometry

Q.no 32. Which of the following is NOT one of the advantages associated with a robotics implementation program?

A : Low costs for hardware and software

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Q.no 41. Which of the following laws is ASIMOV'S first and most important law of robotics?

A : Robot actions must never result in damage to the robot

B : Robots must never take actions harmful to humans

C : Robot must follow the directions given by human

D : Robots must make business a greater profit

Q.no 42. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

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B : hydraulics involves the compression of air

C : pneumatic involves the compression of air

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Q.no 43. Which of the following terms refers to the rotational motion of a robot arm

A : Swivel

B : Axle

C : Retrograde

D : Roll

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A : Relational maps

B : Geomatric Maps

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Q.no 52. The following is true for a Robot & NC Machine

A : Similar power drive technology is used in both

B : Different feedback systems are used in both

C : Programming is same for both

D : Programming is not same for both

Q.no 53. The main objective (s) of Industrial robot is to

A : To maximize the labor requirement

B : To increase productivity

C : To decrease the life of production machines

D : To decrease productivity

Q.no 54. Internal state sensors are used for measuring which of below parameter of the end effector.

A : Position

B : Position & Velocity

C : Velocity & acceleration

D : Position, Velocity & acceleration

Q.no 55. Which of the following is the serial robot?

A : Commercial robot

B : Industrial robot

C : In-house robot

D : Mobile Robot

Q.no 56. Which of the following module is not related to horizontal decomposition?

A : Perception

B : Planning

C : Execute

D : Building Map

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B : Side-angle-side

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Q.no 58. Industrial Robots are generally to designed to carry which of the following coordinate system(s).

A : Cartesian coordinate systems

B : Polar systems.

C : Cylindrical systems

D : Sperical Sytem

Q.no 59. Radial movement (in & out) to the manipulator arm is provided by

A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 60. Robot is derived from Czech word

A : Rabota

B : Robota

C : Rebota

D : Ribota

Answer for Question No 1. is c

Answer for Question No 2. is a

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11363_Artificial Intelligence and Robotics

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B : Multi-functionality

C : Efficient performance

D : Responsibility

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Q.no 30. Which of the following is NOT one of the advantages associated with a robotics implementation program?

A : Low costs for hardware and software

B : Robots work continuously around the clock

C : Quality of manufactured goods can be improved

D : Reduced company cost for worker fringe benefits

Q.no 31. What are the main cons of hill-climbing search?

A : Terminates at local optimum & Does not find optimum solution

B : Terminates at global optimum & Does not find optimum solution

C : Does not find optimum solution & Fail to find a solution

D : Fail to find a solution

Q.no 32. A computer software that provide the services to software applications beyond those available from the operating system is called

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 33. Why do the robot need sensor?

A : To collect information from environment

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D : Both option 1 and 2 are true

Q.no 34. Imge based servoing associate with

A : Robot pose

B : Robot action

C : Robot position

D : Robat path

Q.no 35. What is odometry

A : Information acquired

B : estimation

C : Calculation

D : Motion Sensors

Q.no 36. If something is open or closed in the system then it is informed by followoing sensor.

A : Contact Sensor

B : Inertial Sensor

C : Sonar Sensor

D : Biosensor

Q.no 37. what is heuristic function

A : Lowest path cost

B : Cheapest path from root to goal node

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Q.no 39. Which is type of Robotics Perception

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B : Map related

C : Path related

D : Position related

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A : Path

B : Position

C : Robot

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A : Fixed Sequence Robot

B : Variable sequence robot

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D : Numerical Control robot

Q.no 42. Which of the following is an example of inertia sensor?

A : Thermometer

B : Accelerometer

C : Touch screen

D : TV Remote

Q.no 43. Which is mode of mining

A : Close pit mining

B : Mining

C : Pit Mining

D : Underground Mining

Q.no 44. Active or inactive can be category of

A : Localization

B : Landmarks classes

C : pose evalution

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B : Robots must never take actions harmful to humans

C : Robot must follow the directions given by human

D : Robots must make business a greater profit

Q.no 50. Which of the following sensor uses a laser beam to determine the distance to an object?

A : Sonar

B : Radar

C : Infrared

D : Laser Rangefinder

Q.no 51. The number of moveable joints in the base, the arm, and the end effectors of the robot determines

A : degrees of freedom

B : payload capacity

C : operational limits

D : flexibility

Q.no 52. What is the name for space inside which a robot unit operates?

A : Environment

B : Spatial base

C : Work envelop

D : Exclusion zone

Q.no 53. A Kalman filter is useful in

A : Merging position

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A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 55. Which of the following is the serial robot?

A : Commercial robot

B : Industrial robot

C : In-house robot

D : Mobile Robot

Q.no 56. In which of the following operations Continuous Path System is used

A : Pick & Place

B : Loading & unloading

C : Continuous welding

D : Pick and Loading

Q.no 57. Which of the following module is not related to horizontal decomposition?

A : Perception

B : Planning

C : Execute

D : Building Map

Q.no 58. The Vertical decomposition of the robotic control system is based on

A : Sensing

B : Sensing and Planning

C : Sensing and Acting

D : Sensing, Planning and Acting

Q.no 59. Practical sensor domensions which is referred as

A : Homing

B : servoing

C : Robat action

D : Pose estimation

Q.no 60. The Robot designed with Polar coordinate system has

A : Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

D : Two rotational & one liner movement

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Answer for Question No 16. is a

Answer for Question No 17. is b

Answer for Question No 18. is b

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Answer for Question No 21. is a

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Answer for Question No 23. is a

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11363_Artificial Intelligence and Robotics

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Q.no 1. What is EKF

A : Existance Kalman filter

B : Extended Klaman Filter

C : Each Kalman filter

D : Evalution Kalman Filter

Q.no 2. What is GPS

A : Global Positioning system

B : Global Point System

C : Global System

D : Global path System

Q.no 3. What is AGV

A : Automated guided Vehical

B : Automated grid Vehical

C : Automated grid Van

D : Automatic guided Vehical

Q.no 4. A* algorithm is based on which of the following concept?

A : Best-First-Search

B : Breadth-First-Search

C : Depth-First –Search

D : Hill climbing

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B : Stack

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C : Intertial

D : Biosensor

Q.no 7. Which of the following is not functionality of robotics?

A : Re-programmability

B : Multi-functionality

C : Efficient performance

D : Responsibility

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D : Transducer

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C : Convoy assistant

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B : Aircraft

C : Airoplan

D : Robot

Q.no 15. Which of the following is a visual sensor?

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B : Radar

C : Smart Camera

D : Sonar

Q.no 16. Which of the following sensor make use of light emitting diode?

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Q.no 17. Which of the following branch is not a parts of robotics?

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B : Mechanical Engineering

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D : Chemical Engineering

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D : Biosensor

Q.no 20. Who work on space Robotics mission

A : Soviet

B : IBM

C : Google

D : Yahoo

Q.no 21. The sensor that requires physical touch of an object is called

A : Contact Sensor

B : Inertial Sensors

C : Infrared Sensor

D : Laser Rangefinder

Q.no 22. Which of the following is not advantage of robotics?

A : Greater flexibility and re-programmability

B : Greater response time to inputs than human

C : Greater unemployment

D : Improved product quality

Q.no 23. Weighted voting of correction vectors is a technique of

A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 24. Which of the following is not true?

A : For robotics, you should have a knowledge of different sensors

B : For robotics, you must be able to write different planning algorithms

C : For robotics, you may have to use actuators

D : For robotics, you do not require help of computer engineers, mechanical engineers and electrical engineers

Q.no 25. What is the evaluation function in greedy approach?

A : Heuristic function

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B : To map environment atribute to a quantitative measurement

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D : Both option 1 and 2 are true

Q.no 31. Which of the following sensor is used to monitor the motor activities?

A : Contact Sensor

B : Inertial Sensor

C : Infrared Sensor

D : Biosensor

Q.no 32. Whai is necessity for a lot of sensible mobile robotics funaction

A : Map discovery

B : Geomatric Maps

C : Perceptul maps

D : Sensorial maps

Q.no 33. What is reckoning

A : Evaluating existing location

B : Evaluating Previous location

C : Information acquired

D : Finding the location

Q.no 34. The sensor that receive sound echoes without transmitting their own sound signals is called

A : Active Sonar

B : Passive Sonar

C : Radar

D : Laser Rangefinder

Q.no 35. Which of the following terms refers to the rotational motion of a robot arm

A : Swivel

B : Axle

C : Retrograde

D : Roll

Q.no 36. Which of the following is the component of machine that is responsible for controlling a mechanism system?

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 37. Which is type of Robotics Perception

A : Marker related

B : Map related

C : Path related

D : Position related

Q.no 38. Convergense of the estimates is a technique of

A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 39. Natural Enviroment are not particularly organized or skilled for

A : Machines

B : Robots

C : Path finding

D : Odometry

Q.no 40. A computer software that provide the services to software applications beyond those available from the operating system is called

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Q.no 42. The Signals which represent 2D & 3D odjects gathered from sensor data are referred as

A : Relational maps

B : Sensorial maps

C : Perceptul maps

D : Geomatric Maps

Q.no 43. Active or inactive can be category of

A : Localization

B : Landmarks classes

C : pose evalution

D : Robot

Q.no 44. The device that is used to convert energy from one form to another is called

A : Emiter

B : Transducer

C : Transmitter

D : Receiver

Q.no 45. To measure heat of an object which of the following sensor is used?

A : Sonar

B : Radar

C : Infrared

D : Laser Rangefinder

Q.no 46. The original LISP machines produced by both LMI and Symbolics were based on research performed at

A : CMU

B : MIT

C : Stanford University

D : RAMD

Q.no 47. In a rule-based system procedural domain knowledge is in the form of

A : Production rules

B : Rule interpreters

C : Meta-rules

D : control rules

Q.no 48. If a robot can alter its own trajectory in response to external conditions it is considered to be

A : Intelligent

B : Mobile

C : Open loop

D : Non-servo

Q.no 49. Which of the following laws is ASIMOV'S first and most important law of robotics?

A : Robot actions must never result in damage to the robot

B : Robots must never take actions harmful to humans

C : Robot must follow the directions given by human

D : Robots must make business a greater profit

Q.no 50. Which is mode of mining

A : Close pit mining

B : Mining

C : Pit Mining

D : Underground Mining

Q.no 51. Which of the following work is done by General purpose Robot?

A : Part drive

B : Welding

C : Spray picking

D : Part panting

Q.no 52. What is the name for space inside which a robot unit operates?

A : Environment

B : Spatial base

C : Work envelop

D : Exclusion zone

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Q.no 55. The following drive is used for lighter class of robot.

A : Pneumatic drive

B : Hydrometric drive

C : Electric drive

D : Mechanical drive

Q.no 56. The Robot designed with Cylindrical coordinate system has

A : A Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

D : Two rotational & one liner movement

Q.no 57. Radial movement (in & out) to the manipulator arm is provided by

A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 58. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?

A : Three

B : Four

C : Six

D : Eight

Q.no 59. Triagulation problem is defined as

A : Side-side-side

B : Side-angle-side

C : Both a&b

D : Side-by-side

Q.no 60. A Kalman filter is useful in

A : Merging position

B : Merging pose estimate

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11363_Artificial Intelligence and Robotics

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B : Radar

C : Intertial

D : Biosensor

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B : Horizantal geometric dilution of precision

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Q.no 8. Which of the following sensor make use of light emitting diode?

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B : Capability

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A : Atonomous aircraft

B : Aircraft

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Q.no 18. Local localization follows the location of a robots from

A : Initial Point

B : Final Point

C : Middle point

D : End point

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A : Soviet

B : IBM

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Q.no 20. Which of the following is an example of infrared sensor?

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Q.no 21. The sensor that sends out sound pulses called pings, then receives the returning sound echo is called

A : Active Sonar

B : Passive Sonar

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Q.no 22. SONAR is example of

A : Video sensing

B : GPS

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Q.no 23. Which of the following is not true?

A : For robotics, you should have a knowledge of different sensors

B : For robotics, you must be able to write different planning algorithms

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D : For robotics, you do not require help of computer engineers, mechanical engineers and electrical engineers

Q.no 24. Best-First search is a type of informed search, which of the following principle used to choose the best next node for expansion

A : Evaluation function returning lowest evaluation

B : Evaluation function returning highest evaluation

C : Evaluation function returning lowest & highest evaluation

D : no evaluation function

Q.no 25. Which of the following branch is not a parts of robotics?

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B : DFS Algorithm

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B : Local

C : Global

D : Passive

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C : Google

D : Yahoo

Q.no 45. Which of the following sensor is used to monitor the motor activities?

A : Contact Sensor

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Q.no 46. The device that is used to convert energy from one form to another is called

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Q.no 48. Which of the following is the component of machine that is responsible for controlling a mechanism system?

A : Sensor

B : Middleware

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Q.no 49. Which of the following is an example of contact sensor?

A : Thermometer

B : Accelerometer

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Q.no 51. The Robot designed with Polar coordinate system has

A : Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

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Q.no 52. Which of the following robotic control paradigm make use of planning?

A : Horizontal and Vertical

B : Vertical and Hybrid

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Q.no 54. Topological Maps referred as

A : Relational maps

B : Geomatric Maps

C : Perceptul maps

D : Sensorial maps

Q.no 55. Which of the following is not a programming language for computer controlled Robot?

A : AMC

B : VAL

C : RAIL

D : HELP

Q.no 56. Industrial Robots are generally to designed to carry which of the following coordinate system(s).

A : Cartesian coordinate systems

B : Polar systems.

C : Cylindrical systems

D : Sperical Sytem

Q.no 57. The Robot designed with Cartesian coordinate system has

A : Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

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Q.no 58. If the dimension of search problem is very high then suitable algorithm for path planning is

A : Dijkstra's Algorithm

B : A* Algorithm

C : D* Algorithm

D : Rapid-Exploring Random Tree (RRT)

Q.no 59. Radial movement (in & out) to the manipulator arm is provided by

A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 60. Triagulation problem is defined as

A : Side-side-side

B : Side-angle-side

C : Both a&b

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Answer for Question No 41. is a

Answer for Question No 42. is a

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11363_Artificial Intelligence and Robotics

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Q.no 15. Which is type of Robotics Perception

A : Map related

B : Path related

C : Position related

D : Edge related

Q.no 16. A* algorithm is based on which of the following concept?

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B : Breadth-First-Search

C : Depth-First –Search

D : Hill climbing

Q.no 17. Adaptive localization at multiple scales is a technique of

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B : Filtering

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B : Capability

C : Direction

D : Measurements

Q.no 22. Natural or artificial can be category of

A : Localization

B : Landmarks classes

C : Pose evalution

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A : Horizantal geometric dilution of position

B : Horizantal geometric dilution of precision

C : Vertical geometric dilution of precision

D : Vertical geometric dilution of position

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B : Evaluation function returning highest evaluation

C : Evaluation function returning lowest & highest evaluation

D : no evaluation function

Q.no 25. What is Global Hawk

A : Atonomous aircraft

B : Aircraft

C : Airoplan

D : Robot

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B : Middleware

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Q.no 29. Which of the following terms refers to the rotational motion of a robot arm

A : Swivel

B : Axle

C : Retrograde

D : Roll

Q.no 30. Why do the robot need sensor?

A : To collect information from environment

B : To map environment atribute to a quantitative measurement

C : only option 1 is true

D : Both option 1 and 2 are true

Q.no 31. Triagulation is a technique associate with

A : Pose

B : Landmarks classes

C : Robot

D : Odometry

Q.no 32. Natural Enviroment are not particularly organized or skilled for

A : Machines

B : Robots

C : Path finding

D : Odometry

Q.no 33. what is heuristic function

A : Lowest path cost

B : Cheapest path from root to goal node

C : Average path cost

D : Estimated cost of cheapest path from root to goal node

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B : Radar

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D : Laser Rangefinder

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A : Loop Closing

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Q.no 43. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

A : hydraulics involves the compression of liquids

B : hydraulics involves the compression of air

C : pneumatic involves the compression of air

D : chemical batteries produce AC power

Q.no 44. Which of the following laws is ASIMOV'S first and most important law of robotics?

A : Robot actions must never result in damage to the robot

B : Robots must never take actions harmful to humans

C : Robot must follow the directions given by human

D : Robots must make business a greater profit

Q.no 45. What is odometry

A : Information acquired

B : estimation

C : Calculation

D : Motion Sensors

Q.no 46. Servoing is generally used to enable

A : Path

B : Position

C : Robot

D : Diraction

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B : Local

C : Global

D : Passive

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B : DFS Algorithm

C : BFS Algorithm

D : Searching Algorithm

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B : Inertial Sensor

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D : Biosensor

Q.no 51. The Vertical decomposition of the robotic control system is based on

A : Sensing

B : Sensing and Planning

C : Sensing and Acting

D : Sensing, Planning and Acting

Q.no 52. In which of the following operations Continuous Path System is used

A : Pick & Place

B : Loading & unloading

C : Continuous welding

D : Pick and Loading

Q.no 53. Internal state sensors are used for measuring which of below parameter of the end effector.

A : Position

B : Position & Velocity

C : Velocity & acceleration

D : Position, Velocity & acceleration

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11363_Artificial Intelligence and Robotics

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B : Radar

C : Smart Camera

D : Sonar

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B : Extended Klaman Filter

C : Each Kalman filter

D : Evalution Kalman Filter

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Q.no 30. If a robot can alter its own trajectory in response to external conditions it is considered to be

A : Intelligent

B : Mobile

C : Open loop

D : Non-servo

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Q.no 35. In a rule-based system procedural domain knowledge is in the form of

A : Production rules

B : Rule interpreters

C : Meta-rules

D : control rules

Q.no 36. Visual servoing associate with

A : Robot pose

B : Robot action

C : Robot position

D : Robat path

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C : pneumatic involves the compression of air

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B : Local

C : Global

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A : Close pit mining

B : Mining

C : Pit Mining

D : Underground Mining

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B : MIT

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C : Finding shortest path and optimal path

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A : Rabota

B : Robota

C : Rebota

D : Ribota

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A : Actuators

B : Controller

C : Sensors

D : Manipulator

Q.no 55. Which of the following is the serial robot?

A : Commercial robot

B : Industrial robot

C : In-house robot

D : Mobile Robot

Q.no 56. Decision support programs are designed to help managers make

A : Budget projections

B : Visual presentation

C : Business decisions

D : Vacation schedules

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B : Path cost from start node to current node

C : Path cost from start node to current node + Heuristic cost

D : Average of Path cost from start node to current node and Heuristic cost

Q.no 58. Triagulation problem is defined as

A : Side-side-side

B : Side-angle-side

C : Both a&b

D : Side-by-side

Q.no 59. Which of the following work is done by General purpose Robot?

A : Part drive

B : Welding

C : Spray picking

D : Part panting

Q.no 60. Practical sensor domensions which is referred as

A : Homing

B : servoing

C : Robat action

D : Pose estimation

Answer for Question No 1. is c

Answer for Question No 2. is d

Answer for Question No 3. is a

Answer for Question No 4. is d

Answer for Question No 5. is b

Answer for Question No 6. is a

Answer for Question No 7. is b

Answer for Question No 8. is a

Answer for Question No 9. is c

Answer for Question No 10. is b

Answer for Question No 11. is a

Answer for Question No 12. is a

Answer for Question No 13. is a

Answer for Question No 14. is a

Answer for Question No 15. is c

Answer for Question No 16. is c

Answer for Question No 17. is b

Answer for Question No 18. is a

Answer for Question No 19. is d

Answer for Question No 20. is b

Answer for Question No 21. is c

Answer for Question No 22. is a

Answer for Question No 23. is b

Answer for Question No 24. is a

Answer for Question No 25. is a

Answer for Question No 26. is a

Answer for Question No 27. is a

Answer for Question No 28. is d

Answer for Question No 29. is b

Answer for Question No 30. is a

Answer for Question No 31. is a

Answer for Question No 32. is b

Answer for Question No 33. is a

Answer for Question No 34. is c

Answer for Question No 35. is a

Answer for Question No 36. is a

Answer for Question No 37. is a

Answer for Question No 38. is d

Answer for Question No 39. is c

Answer for Question No 40. is c

Answer for Question No 41. is d

Answer for Question No 42. is b

Answer for Question No 43. is c

Answer for Question No 44. is a

Answer for Question No 45. is a

Answer for Question No 46. is b

Answer for Question No 47. is a

Answer for Question No 48. is a

Answer for Question No 49. is b

Answer for Question No 50. is a

Answer for Question No 51. is c

Answer for Question No 52. is c

Answer for Question No 53. is b

Answer for Question No 54. is a

Answer for Question No 55. is b

Answer for Question No 56. is c

Answer for Question No 57. is c

Answer for Question No 58. is c

Answer for Question No 59. is b

Answer for Question No 60. is a

Seat No -

Total number of questions : 60

11363_Artificial Intelligence and Robotics

Time : 1hr

Max Marks : 50

N.B

1) All questions are Multiple Choice Questions having single correct option.

2) Attempt any 50 questions out of 60.

3) Use of calculator is allowed.

4) Each question carries 1 Mark.

5) Specially abled students are allowed 20 minutes extra for examination.

6) Do not use pencils to darken answer.

7) Use only black/blue ball point pen to darken the appropriate circle.

8) No change will be allowed once the answer is marked on OMR Sheet.

9) Rough work shall not be done on OMR sheet or on question paper.

10) Darken ONLY ONE CIRCLE for each answer.

Q.no 1. Weighted voting of correction vectors is a technique of

A : Recursive filtering

B : Filtering

C : Laandmark

D : Pose estimation

Q.no 2. Which of the following sensor work based on sound navigation ranging?

A : Sonar

B : Radar

C : Intertial

D : Biosensor

Q.no 3. Which is level of performance

A : Driving system

B : Convoy system

C : Convoy assistant

D : Automatic guided Vehical

Q.no 4. what is GDOP

A : Geometric dilution of position

B : Geometric dilution of precision

C : Geometric dilution of path

D : Geometric dilution of pointer

Q.no 5. What is AGV

A : Automated guided Vehical

B : Automated grid Vehical

C : Automated grid Van

D : Automatic guided Vehical

Q.no 6. Which of the following search strategy uses a problem specific knowledge

A : uninformed Search

B : Breadth-First-Search

C : Heuristic Search

D : Best search

Q.no 7. Which of the following sensor work based on radio detection and ranging?

A : Sonar

B : Radar

C : Intertial

D : Biosensor

Q.no 8. Which of the following is an example of infrared sensor?

A : Thermometer

B : Accelerometer

C : Gyroscope

D : TV Remote

Q.no 9. A device that is used to detect event or changes in the environment is called

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 10. The sensor that sends out sound pulses called pings, then receives the returning sound echo is called

A : Active Sonar

B : Passive Sonar

C : Radar

D : Laser Rangefinder

Q.no 11. The sensor that requires physical touch of an object is called

A : Contact Sensor

B : Inertial Sensors

C : Infrared Sensor

D : Laser Rangefinder

Q.no 12. what is HDOP

A : Horizantal geometric dilution of position

B : Horizantal geometric dilution of precision

C : Vertical geometric dilution of precision

D : Vertical geometric dilution of position

Q.no 13. What is EKF

A : Existance Kalman filter

B : Extended Klaman Filter

C : Each Kalman filter

D : Evalution Kalman Filter

Q.no 14. Best-First search is a type of informed search, which of the following principle used to choose the best next node for expansion

A : Evaluation function returning lowest evaluation

B : Evaluation function returning highest evaluation

C : Evaluation function returning lowest & highest evaluation

D : no evaluation function

Q.no 15. Which of the following is a visual sensor?

A : Laser Rangefinder

B : Radar

C : Smart Camera

D : Sonar

Q.no 16. Best-First search can be implemented using the following data structure

A : Queue

B : Stack

C : Priority Queue

D : Circular Queue

Q.no 17. Which of the following sensor is most suitable for clinical, agricultural and food industry?

A : Contact Sensor

B : Inertial Sensor

C : Infrared Sensor

D : Biosensor

Q.no 18. What is the name of algorithm in which a loop that continually moves in the direction of increasing value – that is uphill

A : Up-Hill Search

B : Hill-Climbing

C : Hill algorithm

D : Platue climbing valley

Q.no 19. Which of the following branch is not a parts of robotics?

A : Computer Engineering

B : Mechanical Engineering

C : Electrical Engineering

D : Chemical Engineering

Q.no 20. The robot that repeats the same motions according to recorded information is called

A : Fixed Sequence Robot

B : Variable sequence robot

C : Playback Robot

D : Numerical Control robot

Q.no 21. What is the evaluation function in greedy approach?

A : Heuristic function

B : Path cost from start node to current node

C : Path cost from start node to current node + Heuristic cost

D : Average of Path cost from start node to current node and Heuristic cost

Q.no 22. Which of the following is not advantage of robotics?

A : Greater flexibility and re-programmability

B : Greater response time to inputs than human

C : Greater unemployment

D : Improved product quality

Q.no 23. Which of the following is not functionality of robotics?

A : Re-programmability

B : Multi-functionality

C : Efficient performance

D : Responsibility

Q.no 24. Local localization follows the location of a robots from

A : Initial Point

B : Final Point

C : Middle point

D : End point

Q.no 25. Who work on space Robotics mission

A : Soviet

B : IBM

C : Google

D : Yahoo

Q.no 26. In a rule-based system procedural domain knowledge is in the form of

A : Production rules

B : Rule interpreters

C : Meta-rules

D : control rules

Q.no 27. Robot that perform the successive stages of a task according to predetermined, unchanging method is called as

A : Fixed Sequence Robot

B : Variable sequence robot

C : Playback Robot

D : Numerical Control robot

Q.no 28. Triagulation is a technique associate with

A : Pose

B : Landmarks classes

C : Robot

D : Odometry

Q.no 29. Which is fundamental approache of mapping

A : Loop Closing

B : Sensorial maps

C : Perceptul maps

D : Geomatric Maps

Q.no 30. Why do the robot need sensor?

A : To collect information from environment

B : To map environment atribute to a quantitative measurement

C : only option 1 is true

D : Both option 1 and 2 are true

Q.no 31. With regard to the physics of power systems used operate robots, which statement or statements are most correct?

A : hydraulics involves the compression of liquids

B : hydraulics involves the compression of air

C : pneumatic involves the compression of air

D : chemical batteries produce AC power

Q.no 32. Which of the following laws is ASIMOV'S first and most important law of robotics?

A : Robot actions must never result in damage to the robot

B : Robots must never take actions harmful to humans

C : Robot must follow the directions given by human

D : Robots must make business a greater profit

Q.no 33. Which of the following sensor uses a laser beam to determine the distance to an object?

A : Sonar

B : Radar

C : Infrared

D : Laser Rangefinder

Q.no 34. The sensor that receive sound echoes without transmitting their own sound signals is called

A : Active Sonar

B : Passive Sonar

C : Radar

D : Laser Rangefinder

Q.no 35. A computer software that provide the services to software applications beyond those available from the operating system is called

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 36. Which is mode of mining

A : Close pit mining

B : Mining

C : Pit Mining

D : Underground Mining

Q.no 37. What is odometry

A : Information acquired

B : estimation

C : Calculation

D : Motion Sensors

Q.no 38. Whai is necessity for a lot of sensible mobile robotics funaction

A : Map discovery

B : Geomatric Maps

C : Perceptul maps

D : Sensorial maps

Q.no 39. Which of the following is true?

A : Robot minimize the labor cost

B : Robot minimize the productivity

C : Robot minimize the life of production machine

D : Rotot minimize the qualtiy of work

Q.no 40. Which of the following sensor is used to monitor the motor activities?

A : Contact Sensor

B : Inertial Sensor

C : Infrared Sensor

D : Biosensor

Q.no 41. Which of the following is NOT one of the advantages associated with a robotics implementation program?

A : Low costs for hardware and software

B : Robots work continuously around the clock

C : Quality of manufactured goods can be improved

D : Reduced company cost for worker fringe benefits

Q.no 42. Which localization does not requre any previous informatiom

A : Absolute

B : Local

C : Global

D : Passive

Q.no 43. Who work on space Robotics mission

A : NASA

B : IBM

C : Google

D : Yahoo

Q.no 44. Which of the following terms refers to the rotational motion of a robot arm

A : Swivel

B : Axle

C : Retrograde

D : Roll

Q.no 45. Servoing is generally used to enable

A : Path

B : Position

C : Robot

D : Diraction

Q.no 46. If a robot can alter its own trajectory in response to external conditions it is considered to be

A : Intelligent

B : Mobile

C : Open loop

D : Non-servo

Q.no 47. Algorihtm used for path planning is

A : Dijkstra's Algorithm

B : DFS Algorithm

C : BFS Algorithm

D : Searching Algorithm

Q.no 48. Imge based servoing associate with

A : Robot pose

B : Robot action

C : Robot position

D : Robat path

Q.no 49. What are the main cons of hill-climbing search?

A : Terminates at local optimum & Does not find optimum solution

B : Terminates at global optimum & Does not find optimum solution

C : Does not find optimum solution & Fail to find a solution

D : Fail to find a solution

Q.no 50. Which of the following is the component of machine that is responsible for controlling a mechanism system?

A : Sensor

B : Middleware

C : Actuator

D : Transducer

Q.no 51. The Robot designed with Polar coordinate system has

A : Three linear movements

B : Three rotational movement

C : Two liner & one rotational movement

D : Two rotational & one liner movement

Q.no 52. Path planning algorithm is used for

A : Environment Representation

B : Locate mobile robot

C : Finding shortest path and optimal path

D : Surround environment

Q.no 53. The main objective (s) of Industrial robot is to

A : To maximize the labor requirement

B : To increase productivity

C : To decrease the life of production machines

D : To decrease productivity

Q.no 54. In which of the following operations Continuous Path System is used

A : Pick & Place

B : Loading & unloading

C : Continuous welding

D : Pick and Loading

Q.no 55. Radial movement (in & out) to the manipulator arm is provided by

A : Elbow extension

B : Wrist bend

C : Wrist swivel

D : Wrist yaw

Q.no 56. Which of the following places would be LEAST likely to include operational robots?

A : Warehouse

B : Factory

C : Hospitals

D : Private homes

Q.no 57. When will Hill-Climbing algorithm terminate?

A : Stopping criterion met

B : Global Min/Max is achieved

C : No neighbour has higher value

D : no criteria to terminate

Q.no 58. Which of the following work is done by General purpose Robot?

A : Part drive

B : Welding

C : Spray picking

D : Part panting

Q.no 59. The Signals which represent raw data or domainn conversions are referred as

A : Relational maps

B : Sensorial maps

C : Perceptul maps

D : Geomatric Maps

Q.no 60. A Kalman filter is useful in

A : Merging position

B : Merging pose estimate

C : Merging path

D : Merging revoking

Answer for Question No 1. is a

Answer for Question No 2. is a

Answer for Question No 3. is b

Answer for Question No 4. is b

Answer for Question No 5. is a

Answer for Question No 6. is c

Answer for Question No 7. is b

Answer for Question No 8. is d

Answer for Question No 9. is a

Answer for Question No 10. is a

Answer for Question No 11. is a

Answer for Question No 12. is b

Answer for Question No 13. is b

Answer for Question No 14. is a

Answer for Question No 15. is c

Answer for Question No 16. is c

Answer for Question No 17. is d

Answer for Question No 18. is b

Answer for Question No 19. is d

Answer for Question No 20. is c

Answer for Question No 21. is a

Answer for Question No 22. is c

Answer for Question No 23. is d

Answer for Question No 24. is a

Answer for Question No 25. is a

Answer for Question No 26. is a

Answer for Question No 27. is a

Answer for Question No 28. is a

Answer for Question No 29. is a

Answer for Question No 30. is d

Answer for Question No 31. is c

Answer for Question No 32. is b

Answer for Question No 33. is d

Answer for Question No 34. is b

Answer for Question No 35. is b

Answer for Question No 36. is d

Answer for Question No 37. is a

Answer for Question No 38. is a

Answer for Question No 39. is a

Answer for Question No 40. is b

Answer for Question No 41. is a

Answer for Question No 42. is c

Answer for Question No 43. is a

Answer for Question No 44. is d

Answer for Question No 45. is c

Answer for Question No 46. is a

Answer for Question No 47. is a

Answer for Question No 48. is a

Answer for Question No 49. is a

Answer for Question No 50. is c

Answer for Question No 51. is d

Answer for Question No 52. is c

Answer for Question No 53. is b

Answer for Question No 54. is c

Answer for Question No 55. is a

Answer for Question No 56. is d

Answer for Question No 57. is c

Answer for Question No 58. is b

Answer for Question No 59. is b

Answer for Question No 60. is b