BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Tech.(RA)-2021/B.Tech.(RA)-2022
Course Name – Artificial Intelligence in Robotics
Course Code - PCC-ECR401
(Semester IV)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1.   *Choose the correct alternative from the following :*

(i) Illustrate what is Artificial intelligence?

   a) Putting your intelligence into Computer   b) Programming with your own intelligence
   c) Making a Machine intelligent   d) Playing a Game

(ii) Illustrate which instruments are used for perceiving and acting upon the environment?

   a) Sensors and Actuators   b) Sensors
   c) Perceiver   d) None of these

(iii) Select what is the rule of simple reflex agent?

   a) Simple-action rule   b) Condition-action rule
   c) Both Simple-action rule & Condition-action   d) None of these
   rule

(iv) Recognize Turing Test is used for which of the following?

   a) Measuring the success of an intelligent   b) Measuring the fault of an intelligent
   behavior of a system   behavior of a system
   c) Measuring the capacity of an intelligent   d) None of these
   behavior of a system

(v) Identify When agents select actions on the basis of preference for each state, called

   a) Model based reflex agents   b) Goal based agents
   c) Utility based agents   d) Simple agent

(vi) Identify where one real and other artificial agents are simultaneously tested on the basis of equal ground?

   a) Utility based Test environment   b) Turing Test environment
   c) Model based Test environment   d) None of these

(vii) Indicate the Set of actions for a problem in a state space is formulated by a

   a) Intermediate state   b) Initial state
   c) Successor function, which takes current   d) None of these
   action and returns next immediate state

(viii) Illustrate Adversarial search uses which type of agent?

a) Co-operative multi-agent

b) Competitive multi-agent

c) Co-operative single-agent

d) Competitive single-agent

(ix) Select the answer: The truth values of traditional set theory is _____ and that of fuzzy set is _____ .

a) Either 0 or 1, between 0 & 1

b) Between 0 & 1, either 0 or 1

c) Between 0 & 1, between 0 & 1

d) Either 0 or 1, either 0 or 1

(x) Interpret: Backward reasoning is _____

a) Data driven

b) Goal driven

c) Knowledge driven

d) Resolution driven

(xi) State, which of the following is an application of Artificial Intelligence:

a) It helps to exploit vulnerabilities to secure the firm

b) Language understanding and problem-solving (Text analytics and NLP)

c) Easy to create a website

d) It helps to deploy applications on the cloud

(xii) State, in how many categories process of Artificial Intelligence is categorized:

a) categorized into 5 categories

b) processes are categorized based on the input provided

c) categorized into 3 categories

d) process is not categorized

(xiii) Select the right option: LISP machines also are known as _____

a) AI workstations

b) Time-sharing terminals

c) Super mini computers

d) All of the mentioned

(xiv) Explain: There exists two way to infer using semantic networks. In which, knowledge is represented as Frames.

a) Intersection Search

b) Inheritance Search

c) True

d) False

(xv) Determine, which agent deals with the happy and unhappy state?

a) Utility-based agent

b) Model-based agent

c) Goal-based Agent

d) Learning Agent

Group-B
(Short Answer Type Questions)

3 x 5=15

2. Illustrate the usefulness of Lexicon in NLP by mentioning its definition.? (3)
3. Explain feature structures and their representation in NLP. (3)
4. Describe functionality of ROS Master (3)
5. Exemplify the significance of sigmoid function. (3)
6. Explain about the features of PROLOG Language. (3)

OR

Illustrate about the features of neural networks. (3)

Group-C
(Long Answer Type Questions)

5 x 6=30

7. Describe the different domains or Subsets of AI? (5)
8. Explain the concept of NLP and its importance in AI? (5)
9. Discuss different components of the Expert System. (5)
10. Explain briefly the Horn Clauses (5)
11. A budget ariline company operates 3 plains and employs 5 cabin crews. Only one crew can operate on any plain on a single day, and each crew cannot work for more than two days in a row. The company uses all planes every day. A Genetic Algorithm is used to work out the best combination of crews on any particular day. a) Decide a fitness function for this problem. b) Estimate the no of solutions solutions are in this problem. Is it necessary to use (5)

Genetic Algorithms for solving it? What happen if the company operated more plains and employed more crews?

12. Explain: grammars and types of grammars used in NLP. (5)

OR

Explain the role of semantic analysis in NLP? (5)

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