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3 (Sem-6/CBCS) CSC HC 1

2023

COMPUTER SCIENCE

(Honours Core)

Paper : CSC-HC-6016

(Artificial Intelligence)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions as directed : $1 \times 7 = 7$

(a) What is the total number of quantification available in Artificial Intelligence ?

(i) 3

(ii) 2

(iii) 4

(iv) 1

(Choose the correct option)

Contd.

(b) Artificial Intelligent systems can act rationally. (State True **or** False)

(c) Goal based agents have higher capability than model-based reflex agents. (State True **or** False)

(d) _____ is a heuristic search algorithm. (Fill in the blank)

(e) Hill climbing technique is useful in vehicle routing. (State True **or** False)

(f) In first order logic $\exists x \exists y$ is not same as $\exists y \exists x$. (State True **or** False)

(g) What is the problem space of means-end analysis ?

(i) An initial state and one or more goal state

(ii) One or more initial state and one goal state

(iii) One initial state and one goal state

(iv) None of the above

(Choose the correct option)

2. Define the following terms : 2×4=8

(a) Intelligent agent

(b) Simple reflex agent

(c) Local maxima

(d) Constraint satisfaction problem

3. Answer **any three** of the following questions : 5×3=15

(a) What is Turing test ? What is total turing test ?

(b) What is intelligent agent ? Briefly explain the structure of intelligent agents.

(c) What are the advantages and disadvantages of depth-first search ?

(d) Assume the following facts :

- Ajay likes all kind of food
- Apple and vegetable are food
- Anything anyone eats and not killed is food
- Bimal eats peanuts and still alive
- Gautam eats everything that Bimal eats.

Prove by resolution that Ajay likes peanuts.

(e) Write the algorithm for Means-Ends analysis.

4. Answer **any three** questions : $10 \times 3 = 30$

(a) Explain *any two* main categories of intelligent agents. How intelligent agents work ?

(b) What are the features of production system in AI ? What are the disadvantages of production system ?

(c) Explain Hill climbing search algorithm.

(d) What is the problem with minimax search algorithm ? How Alpha-Beta pruning is used to solve the problem ? Explain with suitable example.

(e) Write a prolog program to implement sumlist (list, sum) so that sum is the sum of a given list of numbers list.

(f) Write short notes on : **(any two)**

$5 \times 2 = 10$

(i) Default reasoning

(ii) Bayesian probabilistic inference

(iii) Transformational grammar

(iv) Augmented transition nets