

Total No. of printed pages = 8

END SEMESTER EXAMINATION – 2020

Semester : 6th (New)

Subject Code : CO-606

ARTIFICIAL INTELLIGENCE

Full Marks – 70

Time – Three hours

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

Instructions :

1. Questions of PART-A are compulsory.
2. Answer any *five* questions from PART-B.

PART – A

Marks – 25

1 Choose the correct answer : $1 \times 15 = 15$

(i) What is Artificial intelligence ?

(a) Putting your intelligence into Computer

(b) Making a machine intelligent

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- (c) Programming with your own intelligence
- (d) Playing a game
- (ii) Which is not the commonly used programming language for AI ?
- (a) PROLOG (b) Java
- (c) LISP (d) Perl
- (iii) First Order Logic is also known as _____.
- (a) First Order Predicate Calculus
- (b) Quantification Theory
- (c) Lower Order Calculus
- (d) All of the mentioned above
- (iv) Which needed to compute the logical inference algorithm ?
- (a) Logical equivalence
- (b) Validity
- (c) Satisfiability
- (d) All of the mentioned above



(v) Which is not a property of representation of knowledge ?

- (a) Representational verification
- (b) Representational adequacy
- (c) Inferential adequacy
- (d) Inferential efficiency

(vi) Knowledge and reasoning also play a crucial role in dealing with _____ environment.

- (a) Completely observable
- (b) Partially observable
- (c) Neither (a) nor (b)
- (d) Both (a) and (b)

(vii) What is state space ?

- (a) The whole problem
- (b) Your definition to a problem
- (c) Problem you design
- (d) Representing your problem with variable and parameter

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(viii) An expert system component is

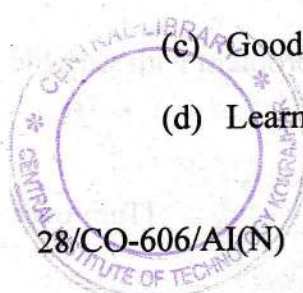
- (a) Inference engine
- (b) Knowledge base
- (c) User interface
- (d) All of these

(ix) Which of the following is an advantage of using an expert system development tool?

- (a) Imposed structure
- (b) Knowledge engineering assistance
- (c) Rapid prototyping
- (d) All of these

(x) Factors which affect the performance of learner system does not include

- (a) Representation scheme used
- (b) Training scenario
- (c) Good data structures
- (d) Learning algorithm



(xi) Which search method takes less memory ?

- (a) Depth-first search
- (b) Breadth-first search
- (c) Both (a) and (b) above
- (d) Linear search

(xii) An AI technique that allows computers to understand associations and relationships between objects and events is called :

- (a) Heuristic processing
- (b) Cognitive science
- (c) Relative symbolism
- (d) Pattern matching

(xiii) Neural Networks are complex _____ with many parameters.

- (a) Linear functions
- (b) Non-linear functions
- (c) Discrete functions
- (d) Exponential functions



(xiv) Which of the following is an expert system ?

- (a) DENDAL
- (b) MYCIN
- (c) FRAME
- (d) AMYCIN

(xv) Which of the following neural networks uses supervised learning ?

- (i) Multilayer perceptron
- (ii) Self-organizing feature map
- (iii) Hopfield network

- (a) (i) (b) (ii)
- (c) (i) and (ii) (d) (i) and (iii)

2. State true or false : 1×5=5

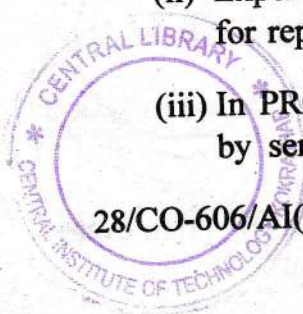
(i) For resolution to apply, all sentences must be in conjunctive normal form, a conjunction of disjunctions of literals.

(ii) Expert System provides consistent answers for repetitive decisions, processes, and tasks.

(iii) In PROLOG Rules and facts are terminated by semicolon (;).

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(iv) Feed-Forward network is a kind of unsupervised learning where training examples are given by external teacher to train the network.

(v) Artificial Intelligence is a combination of computer science, physiology, and philosophy.

3. Fill in the blanks : $1 \times 5 = 5$

(i) Machine learning is _____.

(ii) _____ is one of the most important execution control techniques in PROLOG.

(iii) LISP is based on _____.

(iv) Semantic Network represents _____.

(v) The term _____ refers to the process of searching through knowledge base and deriving new knowledge.

PART - B

Marks - 45

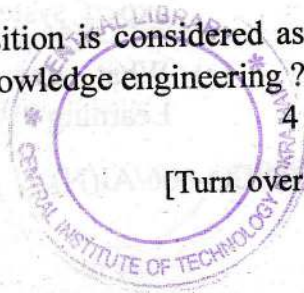
4. (a) Discuss the advantages and disadvantages of Expert Systems. 5

(b) Why knowledge acquisition is considered as most difficult step in knowledge engineering? 4

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(7)

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5. (a) What are the applications of Artificial Intelligence? 5
- (b) Write a PROLOG program to calculate factorial of an integer number. 4
- 6 (a) How inheritance handled with semantic network? 5
- (b) Differentiate between propositional logic and predicate logic. 4
7. (a) Explain A* algorithm. Which one it uses, queue or stack, and why? 5
- (b) Describe Depth First Search algorithm and illustrate it with an example. 4
8. (a) Discuss the following learning situations of Artificial Neural Networks :
- (i) Supervised
- (ii) Unsupervised learning. 3+3=6
- (b) Explain about components of a Learning System. 3
9. (a) Explain about System Predicate Cut. 3
- (b) What are the different phases in building an expert system? 4
- (c) What do you mean by Reinforcement Learning?

