D/1017(A)

M.Sc. (Fourth Semester) (ATKT)
EXAMINATION, May-June, 2020
COMPUTER SCIENCE
Paper Second
(Artificial Intelligence and Expert System)

Duration- Three hours

Maximum Marks: 100

Note: Attempt all Sections as directed.

Section- A
(Objective/Multiple Choice Questions)

Note: - Choose the correct /most appropriate answer and write it in your answer book. (1 mark each)

1. In LISP, the function returns the list that results after the first element is removed (the rest f the list), is
   a) car
   b) last
   c) cons
   d) cdr

2. LISP was created by:
   a) John McCarthy
   b) Marvin Minsky
   c) Alan Turing
   d) Allen Newell and Herbert Simon

3. Which approach to speech recognition avoids the problem caused by the variation in speech patterns among different speakers?
   a) Continuous speech recognition
   b) Isolated word recognition
   c) Connected word recognition
   d) Speaker-dependent recognition

4. Which of the following, is a component of an expert system?
   a) inference engine
   b) knowledge base
   c) user interface
   d) all of the mentioned

5. Who is the "father" of artificial intelligence?
   a) Fisher Ada
   b) John McCarthy
   c) Allen Newell
   d) Alan Turning

6. What is Transposition rule?
   a) From P $\rightarrow$ Q, infer ~Q $\rightarrow$ P
   b) From P $\rightarrow$ Q, infer Q $\rightarrow$ ~P
   c) From P $\rightarrow$ Q, infer Q $\rightarrow$ P
   d) From P $\rightarrow$ Q, infer ~Q $\rightarrow$ ~P

7. An Artificial Neural Network Is based on
   a) Strong Artificial Intelligence approach
   b) Weak Artificial Intelligence approach

c) Cognitive Artificial Intelligence approach

d) Applied Artificial Intelligence approach

8. Input segments of AI programming contain(s)

   a) sound

   b) smell

   c) touch

   d) None of the mentioned

9. Why the parsing is used?

   a) Interpretation

   b) Building a parse tree

   c) Recognition

   d) All of the mentioned

10. How many objects are available in closed classes?

   a) 1

   b) 2

   c) 3

   d) 4

11. Semantic grammars:

   a) Encode semantic information into a syntactic grammar

   b) Decode semantic information into a syntactic grammar

   c) Encode syntactic information into a semantic grammar

   d) Decode syntactic information into a semantic grammar

12. Frames in artificial intelligence is derived from semantic nets.

   a) True

   b) False

13. Which is not a property of representation of knowledge?

   a) Representational Verification

   b) Representational Adequacy

   c) Inferential Adequacy

   d) Inferential Efficiency

14. Knowledge and reasoning also play a crucial role in dealing with _____ environment.

   a) Completely Observable

   b) Partially Observable

   c) Neither Completely nor Partially Observable

   d) Only Completely and Partially Observable

15. Natural language understanding is used in:

   a) natural language interfaces

   b) natural language front ends

   c) text understanding systems

   d) all of the mentioned

16. An expert system differs from a database program in that only an expert system:

   a) contains declarative knowledge

   b) contains procedural knowledge

   c) features the retrieval of stored information

   d) expects users to draw their own conclusions

17. Which of the following is true related to 'Satisfiable' property?

   a) A statement is satisfiable if there is some interpretation for which it is false

   b) A statement is satisfiable if there is some interpretation for which it is true

c) A statement is satisfiable if there is no interpretation for which it is true

d) A statement is satisfiable if there is no interpretation for which it is false

18. The applications in the Strategic Computing Program include:

   a) battle management

   b) autonomous systems

   c) pilot's associate

   d) all of the mentioned

19. In LISP, the function returns t if <integer> is even and nil otherwise:

   a) (evenp <integer>)

   b) (even <integer>)

   c) (numeven <integer>)

   d) (numnevenp <integer>)

20. ATN stands for

   a) Augmented Transition Nets

   b) Argument Transition Nets

Section –B

(Very short answer type questions)

Note: Attempt all questions.   **(2 marks each)**

1. What is 'Artificial Intelligence'?
2. What is knowledge?
3. What are the applications of Neural Networks?
4. Define parsing.
5. What is PROLOG?
6. Define learning.
7. What is array?
8. What is MYCIN?
9. Define frame.
10. What is semantic analysis?

Section – C

(Short answer type question)

Note: Attempt all questions.   **(3 marks each)**

1. What is intelligence composed of?
2. Explain the applications of Artificial Intelligence.
3. What are the limitations of expert system?
4. What are the components of expert system?
5. What are the benefits of expert system?
6. Differentiate human and machine intelligence.
7. Explain First order predicate calculus.
8. Explain Recursive Transition Nets(RTN).
9. What is knowledge acquisition?
10. Explain AND/OR graphs.

Section – D

(Long Answer Type Questions)

Note: Attempt any five questions.   **(6 marks each)**

1. Describe knowledge representation. What are the types of knowledge? Explain.

2. What is expert system? What are the characteristics of expert system?
3. Explain Forward and Backward chaining.
4. What are Artificial Neural Networks (ANNs)? Explain its basic structure.
5. Explain numeric and manipulation functions in LISP.
6. Explain iteration and recursion in LISP with example.
7. Describe Resolution principle and unification.
8. Describe Breadth-First search and Depth –First search algorithm.
9. Describe A* and AO* algorithm.
10. Explain probabilistic reasoning and uncertainty in planning.