Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Electronics) (Fourth Semester)

EXAMINATION, July, 2022

(Elective Course)

ARTIFICIAL INTELLIGENCE

Paper Code				
ELC	4	0	4	(G)

Questions Booklet Series
D

Time : 1:30 Hours] [*Maximum Marks : 100*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 60 questions. Examinee is required to answer any 50 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 50 questions are attempted by student, then the first attempted 50 questions will be considered for evaluation. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 60 प्रश्न हैं। परीक्षार्थी को किन्हीं 50 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 50 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 50 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) (शेष निर्देश अन्तिम पृष्ठ पर)

(Only for Rough Work)

1. Where does the degree of belief is applied ?

(A) Propositions

(B) Literals

(C) Variables

(D) Statements

2. How many types of random variables are available ?

(A) 1

(B) 2

(C) 3

(D) 4

3. Which is the complete specification of the state of the world ?

(A) Atomic event

(B) Complex event

(C) Simple event

(D) None of the above

4. Which variable cannot be written in entire distribution as a table ?

(A) Discrete

(B) Continuous

(C) Both Discrete and Continuous

(D) None of the above

5. What is meant by probability density function ?

(A) Probability distributions

(B) Continuous variable

(C) Discrete variable

(D) Probability distributions for continuous variables

6. The truth values of traditional set theory is _____ and that of fuzzy set is _____.

(A) Either 0 or 1, between 0 and 1

(B) Between 0 and 1, either 0 or 1

(C) Between 0 and 1, between 0 and 1

(D) Either 0 or 1, either 0 or 1

7. The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by _____.

(A) Fuzzy Set

(B) Crisp Set

(C) Fuzzy and Crisp Set

(D) None of the above

8. The values of the set membership is represented by :

(A) Discrete set

(B) Degree of truth

(C) Probabilities

(D) Both Degree of truth and Probabilities

9. Fuzzy set theory defines fuzzy operators. Choose the fuzzy operators from the following :

(A) AND

(B) OR

(C) NOT

(D) All of the above

10. There are also other operators, more linguistic in nature, is called _____ that can be applied to fuzzy set theory.

(A) Hedges

(B) Lingual Variable

(C) Fuzzy Variable

(D) None of the above

11. Fuzzy logic is usually represented as :

(A) IF-THEN-ELSE rules

(B) IF-THEN rules

(C) Both IF-THEN-ELSE rules and IF-THEN rules

(D) None of the above

12. _____ is/are the way(s) to represent uncertainty.

(A) Fuzzy logic

(B) Probability

(C) Entropy

(D) All of the above

13. _____ are algorithms that learn from their more complex environments (hence eco) to generalize, approximate and simplify solution logic.

(A) Fuzzy Relational DB

(B) Ecorithms

(C) Fuzzy Set

(D) None of the above

14. In LISP, the function returns *t* if <integer> is even and nil otherwise _____.

(A) (evenp <integer>)

(B) (even <integer>)

(C) (numeven <integer>)

(D) (numevenp <integer>)

15. 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 the above

16. Artificial Intelligence is about _____.

(A) Playing a game on computer

(B) Making a machine intelligent

(C) Programming on machine with your own intelligence

(D) Putting your intelligence in machine

17. What is the goal of Artificial Intelligence ?

(A) To solve artificial problems

(B) To extract scientific causes

(C) To explain various sorts of intelligence

(D) To solve real-world problems

18. 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.

19. 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

20. Which of the following is a component of Artificial Intelligence ?

(A) Learning

(B) Training

(C) Designing

(D) Puzzling

21. Which of the following is not a type of Artificial Intelligence agent ?

(A) Learning AI agent

(B) Goal-based AI agent

(C) Simple reflex AI agent

(D) Unity-based AI agent

22. Which of the following is not the commonly used programming language for Artificial Intelligence ?

(A) Perl

(B) Java

(C) PROLOG

(D) LISP

23. What is the name of the Artificial Intelligence system developed by Daniel Bobrow ?

(A) program known as BACON

(B) system known as STUDENT

(C) program known as SHRDLU

(D) system known as SIMD

24. Which of the following is not an application of artificial intelligence ?

(A) LIDAR

(B) Face recognition system

(C) Chatbots

(D) DBMS

25. Which of the following machine requires input from the humans but can interpret the outputs themselves ?

(A) Actuators

(B) Sensor

(C) Agents

(D) AI system

26. _____ number of informed search method are there in Artificial Intelligence.

(A) 4

(B) 3

(C) 2

(D) 1

27. The total number of proposition symbols in AI are _____.

(A) 3 proposition symbols

(B) 1 proposition symbol

(C) 2 proposition symbols

(D) No proposition symbols

28. Which of the following are the approaches to Artificial Intelligence ?

(A) Applied approach

(B) Strong approach

(C) Weak approach

(D) All of the above

29. What is the main task of a problem-solving agent ?

(A) Solve the given problem and reach to goal

(B) To find out which sequence of action will get it to the goal state

(C) Both of the above

(D) None of the above

30. 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

31. A search algorithm takes _____ as an input and returns _____ as an output.

(A) Input, output

(B) Problem, solution

(C) Solution, problem

(D) Parameters, sequence of actions

32. The _____ is a touring problem in which each city must be visited exactly once. The aim is to find the shortest tour.

(A) Finding short path between a source and a destination

(B) Travelling Salesman problem

(C) Map coloring problem

(D) Depth first search traversal on a given map represented as a graph

33. A production rule consists of _____.

(A) A set of rule

(B) A sequence of steps

(C) Set of rule and sequence of steps

(D) Arbitrary representation to problem

34. Which is the best way to go for game playing problem ?

(A) Linear approach

(B) Heuristic approach (some knowledge is stored)

(C) Random approach

(D) An optimal approach

35. 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

36. Treatment chosen by doctor for a patient for a disease is based on _____.

(A) Only current symptoms

(B) Current symptoms plus some knowledge from the text-books

(C) Current symptoms plus some knowledge from the text-books plus experience

(D) All of the above

37. 'α | = β' (to mean that the sentence α entails the sentence β) if and only if, in every model in which α is _____ β is also _____.

(A) true, true

(B) true, false

(C) false, true

(D) false, false

38. Inference algorithm is complete only if _____.

(A) It can derive any sentence.

(B) It can derive any sentence that is an entailed version.

(C) It is truth preserving.

(D) It can derive any sentence that is an entailed version and it is truth preserving.

39. The statement comprising the limitations of FOL is/are _____.

(A) Expressiveness

(B) Formalizing Natural Languages

(C) Many-sorted Logic

(D) All of the above

40. First Order Logic is also known as _____.

(A) First Order Predicate Calculus

(B) Quantification Theory

(C) Lower Order Calculus

(D) All of the above

41. A _____is used to demonstrate, on a purely syntactic basis, that one formula is a logical consequence of another formula.

(A) Deductive Systems

(B) Inductive Systems

(C) Reasoning with Knowledge Based Systems

(D) Search Based Systems

42. What is the process of capturing the inference process as a single inference rule ?

(A) Ponens

(B) Clauses

(C) Generalized Modus Ponens

(D) Variables

43. Which process makes different logical expression looks identical ?

(A) Lifting

(B) Unification

(C) Inference process

(D) None of the above

44. Which algorithm takes two sentences and returns a unifier ?

(A) Inference

(B) Hill-climbing search

(C) Depth-first search

(D) Unify algorithm

45. Where did all the facts are stored to implement store and fetch function ?

(A) Database

(B) Knowledge base

(C) Datamart

(D) All of the above

46. How the buckets are stored in predicate indexing ?

(A) Lists

(B) Stack

(C) Hashes

(D) None of the above

47. In partial order plan :

(a) Relationships between the actions of the behaviour are set prior to the actions.

(b) Relationships between the actions of the behaviour are not set until absolutely necessary.

Choose the correct option :

(A) (a) is true.

(B) (b) is true.

(C) Either (a) or (b) can be true depending upon situation.

(D) Neither (a) nor (b) is true.

48. Following is/are the component(s) of the partial order planning :

(A) Bindings

(B) Goal

(C) Causal links

(D) All of the above

49. A plan that describe how to take actions in levels of increasing refinement and specificity is _____.

(A) Problem solving

(B) Planning

(C) Non-hierarchical plan

(D) Hierarchical plan

50. A constructive approach in which no commitment is made unless it is necessary to do so, is _____.

(A) Least commitment approach

(B) Most commitment approach

(C) Non-linear planning

(D) Opportunistic planning

51. Uncertainty arises in the Wumpus world because the agent's sensors give only _____.

(A) Full and Global Information

(B) Partial and Global Information

(C) Partial and Local Information

(D) Full and Local Information

52. Which data structure is used to give better heuristic estimates ?

(A) Forwards state-space

(B) Backward state-space

(C) Planning graph algorithm

(D) None of the above

53. Which is used to extract solution directly from the planning graph ?

(A) Planning algorithm

(B) Graph plan

(C) Hill-climbing search

(D) All of the above

54. What are present in the planning graph ?

(A) Sequence of levels

(B) Literals

(C) Variables

(D) Heuristic estimates

55. What is the starting level of planning graph ?

(A) Level 3

(B) Level 2

(C) Level 1

(D) Level 0

56. What are present in each level of planning graph ?

(A) Literals

(B) Actions

(C) Variables

(D) Both Literals and Actions

57. What is meant by persistence actions ?

(A) Allow a literal to remain false

(B) Allow a literal to remain true

(C) Allow a literal to remain false and true

(D) None of the above

58. What is called inconsistent support ?

(A) If two literals are not negation of other.

(B) If two literals are negation of other.

(C) Mutually exclusive.

(D) None of the above

59. What is used for probability theory sequences ?

(A) Conditional logic

(B) Logic

(C) Extension of propositional logic

(D) None of the above

60. Where does the dependance of experience is reflected in prior probability sentences ?

(A) Syntactic distinction

(B) Semantic distinction

(C) Both Syntactic and Semantic distinction

(D) None of the above

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is ny discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर— A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।