

Code No. : 5735

Sub. Code : ZCIM 21

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Second Semester

Computer Science with Artificial Intelligence – Core

MACHINE LEARNING

(For those who joined in July 2022 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- The _____ algorithm first initialized the version space to contain all hypothesis in H , then eliminates any hypothesis found inconsistent with any training example
 - Candidate Elimination
 - List – then Eliminate
 - Candidate Elimination Learning
 - None

- _____ characterizes the purity of an arbitrary collection of examples
 - Entropy
 - Information gain
 - Both (a) and (b)
 - None
- _____ is designed to cover, if the training examples are not linearly separable
 - Perceptron
 - Delta Rule
 - Instances
 - None
- _____ combines bits sampled uniformly from two parents
 - two point cross over
 - mutation
 - uniform cross over
 - none
- _____ is the description length of h under the optimal encoding for the hypothesis space H
 - $\log_2 P(h/D)$
 - $\log_2 P(D/h)$
 - $\log_2 P(h)$
 - None

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- How many training examples will the learner misclassify before converging to a successful hypothesis _____?
 - sample complexity
 - computational complexity
 - mistake bound
 - none
- _____ means approximating a real - valued target function
 - residual
 - regression
 - kernal function
 - none
- _____ may be represented by rich symbolic descriptions
 - instances
 - cases
 - both (a) and (b)
 - none
- _____ algorithms such as IDs learn the entire set of disjuncts simultaneously as part of the single search for an acceptable decision tree
 - decision tree
 - sequential covering
 - simultaneous covering
 - none

- The _____ of a conclusion C with respect to a proof P is the most general set of initial assertions A , such that A entails C according to P
 - weakest pre image
 - strong pre image
 - both (a) and (b)
 - none

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

- (a) How to represent Decision Tree?
Or
(b) What do you mean by concept leaning task?
- (a) What is Recurrent Network?
Or
(b) Define and give a brief note on Baldwin effect.
- (a) What do you mean by error of a Hypothesis?
Or
(b) Give a brief note on Bayes theorem.
- (a) Why do we use Radial Basis Functions?
Or
(b) What is locally weighted linear regression?

15. (a) Write short note on Investing Resolutions.

Or

(b) List out the tasks for learning.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) How do design a learning system?

Or

(b) Write short note on Inductive Bias.

17. (a) What is perceptron? Explain it in detail.

Or

(b) Describe in detail about Genetic Programming.

18. (a) What is the use of EM algorithms? Explain.

Or

(b) What do you mean by simple complexity for infinite Hypothesis spaces?

19. (a) Explain K-Nearest Neighbour learning algorithm in detail.

Or

(b) What is case based learning? Explain.

20. (a) Discuss in detail about learning front – order.

Or

(b) What do you mean by explanation base learning?
