Printed pages: 02 **Sub Code: ECS 801**

Paper Id: | 1 | 0 | 3 | 1 | **Roll No.** | | | | | | | | | | |

B. TECH.
(SEM VII) THEORY EXAMINATION 2017-18
ARTIFICIAL INTELLIGENCE

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x10 = 20**

a. What is an Intelligent Agent? Describe basic kinds of Agents program.
b. Write a short note on the foundation of AI.
c. What do you mean by Artificial Intelligence?
d. Define Turing Test? Is the Turing test is sufficient to define the operational definition of AI.
e. What is difference between Human Vision & Computer Vision?
f. What is role of Pattern Recognition in AI?
g. Differentiate Local Search with Game Search.
h. Describe the role of Artificial Intelligence in Natural Language Processing.
i. What is Machine Learning?
j. Discuss Forward and Backward Chaining.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. What are the different parameters that are used to evaluate a search technique?
b. Show that DFS is neither Complete nor optimal.
c. Compare any two Uninformed search strategies on the basis of following criteria: Completeness, Space Complexity & Optimality.
d. What is Local search? Explain Hill Climbing Algorithm with suitable block diagram.
e. Explain the Expectation and Maximization (EM) algorithm for finding the maximum likelihood with hidden variables.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Describe A* search technique. Prove that A* is complete and optimal.
(b) Describe Alpha-Beta Pruning and give the other modifications to the Min-Max procedure to improve its performance.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) What is Pattern Recognition? Discuss various approaches for Pattern Recognition.
(b) Write an LISP program to convert Centigrade temperature to Fahrenheit.

5. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Discuss complete state space of Water Jug problem with suitable feasible rules.
(b) Differentiate Supervised & Unsupervised Learning with appropriate example.

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6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss Support Vector Machine in detail.

(b) How to solve Eight Queen Problem using State Space Search?

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Design principles of pattern recognition system. ExplainPrinciple Component Analysis (PCA) and LinearDiscriminantAnalysis (LDA).

(b) Convert the following sentence into predicate logic and then prove "Marcus is Dead" using following resolution:

i. Marcus was a man.
ii. Marcus was a Pompeian.
iii. Marcus was born in 40 AD.
iv. All men are mortal.
v. All Pompeian's dead when the volcano erupted in 1979.
vi. No mortal lives more than 150 years.
vii. It is now 1991.
viii. Alive means not dead.

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