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Sub Code: NCS-702

Paper Id: 1 0 4 6

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 are Goals of AI?
b. What is Turing test?
c. Define uniformed search.
d. Write a short note on horizon effect.
e. List various schemes of knowledge representation.
f. Define inference.
g. List out performance measure for learning.
h. What are the types of nodes in decision tree.
i. Write down some applications of pattern recognition.
j. What are the types of neural networks?

SECTION B

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

a. Define the role of the machine intelligence in the human life.
b. Prove that breadth first search and depth first search are the special cases of best first search.
c. Explain the conversion procedure of given formula into normal form.
d. Illustrate decision trees technique using a suitable example.
e. Discuss the classification approach of pattern recognition.

SECTION C

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

(a) Describe the role of computer vision in artificial intelligence.
(b) Describe the role of artificial intelligence in natural language processing.

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

(a) How branch and bound techniques could be used to find the shortest path solution to the travelling salesman problem. Discuss.
(b) Solve the following CSP problem of crypt arithmetic.
Problem:

```
  SEND
+ MORE
.....
 MONEY
```

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

(a) Define Hidden Markov model (HMM). Illustrate how HMMs are used for speech recognition.
(b) Prove that following sentence is valid:
"If prices fall then sell increases. If sell increases then John makes the whole money. But john doesn't make the whole money. Therefore, prices do not fall."

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

(a) Describe statistical learning model in detail.

(b) Write short notes on:

(i) Discrete model/ maximum – likelihood parameter learning.

(ii) Continuous model.

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

(a) Write a note on Linear Discriminant Analysis (LDA).

(b) Explain how PCA is used in pattern recognition. Describe parameter estimation methods in pattern recognition.