Printed Pages—3 **MCAE24**

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2149 **Roll No.** | | | | | | | | | | |

M.C.A.

(SEM. V) THEORY EXAMINATION 2011-12

ARTIFICIAL INTELLIGENCE

Time : 3 Hours *Total Marks : 100*

Note :– Attempt **all** questions.

1. Attempt any **four** parts of the following : **(5×4=20)**

   (a) Define the term artificial intelligence.

   (b) How the artificial intelligence is different than general intelligence ?

   (c) Define Turing test. Is Turing test sufficient to define the operational definition of artificial intelligence ?

   (d) Define the role of intelligent agents in the problem solving.

   (e) Write a short note highlighting the landmark incidences that was responsible for the emergence of artificial intelligence as a new discipline.

   (f) Describe the role of artificial intelligence in natural language processing.

2. Attempt any **two** parts of the following : **(10×2=20)**

   (a) What do you mean by blind search ? List any four blind search techniques. Explain any one.

(b) Describe bidirectional search technique. Prove that bidirectional search technique is complete and optimal.

(c) Show that A* search technique is optimally efficient for any given heuristic function.

3. Attempt any **two** parts of the following : **(10×2=20)**

(a) (i) Prove that the 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."

(ii) Consider the argument :

"All dogs bark. Some animals are dogs. Therefore, some animals bark".

Determine whether the conclusion is a valid consequence of the premises.

(b) Define Hidden Markov Model (HMM). Illustrate why HMM is a potential technique used for probabilistic reasoning.

(c) Explain Bayesian Networks.

4. Attempt any **two** parts of the following : **(10×2=20)**

(a) Illustrate decision trees learning technique using a suitable example.

(b) What is clustering ? Describe k-mean clustering technique.

(c) Describe a learning technique that is used to handle the problems of hidden variables.

5. Write short notes on any **four** of the following : **(5×4=20)**

(a) Pattern Classification

(b) Principle Component Analysis (PCA)

(c) Linear Discriminant Analysis (LDA)

(d) Nearest Neighbour Rule

(e) Support Vector Machine (SVM)

(f) Reinforcement learning.