Subject: ARTIFICIAL INTELLIGENCE & NEURAL NETWORKS

Time: 3 Hours **Max. Marks: 100**

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Knowledge =

(A) Algorithm + Data **(B)** Control + Problem + Data
(C) Facts + Beliefs + Heuristics **(D)** None of the above

b. Advantage of non- symbolic representation is that

(A) The system builder can read what the system knows.
(B) Knowledge is represented by sentences.
(C) It can deal with combination of attributes.
(D) It is possible to read the representation.

c. Which of the following is not the property of WFF's?

(A) Interpretation **(B)** Predicates
(C) Validity **(D)** Equality

d. Reasoning from a goal state towards an initial state is called _____.

(A) Backward Chaining **(B)** Forward Chaining
(C) Breadth First Search **(D)** Heuristic Search

e. Key issues confronting the designer of an AI system are:-

(A) Knowledge Acquisition **(B)** Knowledge Representation
(C) Knowledge Manipulation **(D)** All of the above

f. If a heuristic value _____, then A*algorithm guarantees an optimal solution.

(A) Overestimate **(B)** Never Overestimates
(C) Underestimate **(D)** Never Underestimate

g. Knowledge Processing is a _____ process.

(A) Repetitive **(B)** Planning
(C) Inferential **(D)** Analytical

h. A _____ is a structured representation describing a stereotype sequence of events in a particular context.

(A) Script **(B)** Frame
(C) Conceptual Dependency **(D)** Semantic Network

i. Which of the following is not an EXPERT SYSTEM?

(A) MYCIN **(B)** DENDRAL
(C) XCON **(D)** RCON

j. Bayesian Networks are also called _____

(A) Default Logic **(B)** Probabilistic Inference Networks
(C) Semantic Nets **(D)** None of the above

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Define Artificial Intelligence. What are the objectives of AI? **(4)**

b. Discuss the applications and future of Artificial Intelligence. **(6)**

c. Explain Turing Test. What is its significance? **(6)**

Q.3 a. Explain the procedure of converting WFFs to Clausal form with the help of an example. **(10)**

b. Translate the following sentences into first order logic. **(6)**
(i) All Pompeian were Romans.
(ii) All Romans were either loyal to Caesar or hated him.
(iii) Everyone is loyal to someone.
(iv) People only try to assassinate rulers they are not loyal to.
(v) Caesar was a ruler.
(vi) Marcus tried to assassinate Caesar.

Q.4 a. Explain in detail the procedure of Knowledge Acquisition, giving special mention to source and types of knowledge. **(8)**

b. Write short notes on the following:- **(8)**

(i) Semantic Networks
(ii) Conceptual Graphs

Q.5 a. Explain associative network reasoning systems. **(4)**

b. Discuss briefly about monotonic and non-monotonic reasoning. **(4)**

c. Draw a Bayesian Network to represent car fixing. **(4)**

Q.6 a. Write a note on Blind Search Techniques. **(10)**

b. Explain the MINIMAX procedure with Alpha-Beta cutoff. **(6)**

Q.7 a. What is an Expert System? Draw a neat diagram of the architecture of expert system and explain it. Also write about the characteristics of an expert system. **(8)**

b. Explain how neural network learns. **(5)**

c. Compare Human Intelligence with Machine Intelligence. **(3)**

Q.8 a. Write a short note on: - **(10)**

(i) Hopfield Networks.
(ii) Kohonen Networks.

b. Discuss the benefits and limitation of neural computing. **(6)**

Q.9 a. Write about different approaches that are useful in B2C E-Commerce. **(10)**

b. Describe briefly about TravelPlan Architecture. **(6)**