B. Tech.
(SEM. VIII) EXAMINATION. 2006-07
ARTIFICIAL INTELLIGENCE

Time : 3 Hours] [Total Marks : 100

Note : (1) Attempt all questions.
(2) All questions carry equal marks.

1 Attempt any four of the following : 5x4=20
(a) What is heuristic search? Explain with example.
Also write heuristic function for :
(i) Travelling salesman problem
(ii) Tic-tac toe.
(b) Explain seven problem characteristics with suitable examples.
(c) Explain generate and test algorithm by giving its advantages and disadvantages.
(d) Solve the following cryptarithmetic problem

\[
\begin{align*}
\text{SEND} + \text{MORE} &= \text{MONEY} \\
\end{align*}
\]
(e) Explain what is AI? Write various areas of AI.
(f) Discuss the performance of A* algorithm when the heuristic function either under-estimate or overestimates the value of states.

V-1044] 1 [Contd...
2 Attempt any two of the following: 10×2=20
   (a) Explain syntactic analysis with suitable example.
   (b) Give the conceptual dependency structure to
       parse the following sentence.
       “John wanted Mary to go to the Store”
   (c) Represent the structure of your college using
       transition network concept.

3 Attempt any two of the following: 10×2=20
   (a) Represent following sentences using symbolic
       logic:
       (i)  A drunker is enemy of himself
       (ii) Father of John loves to mother of Merry
       (iii) All students like a good teacher
       (iv) Fruits and vegetables are nutritions.
       (v)  God help those who help themselves.
   (b) “Some medicines are dangerous only if taken
       in excessive amount” Translate the above
       sentence into formulas in predicate logic and
       then to clause form.
   (c) Describe semantic Net and Frames with suitable
       examples.

4 Attempt any two of the following: 10×2=20
   (a) What is Expert System? Explain its various parts.
   (b) Explain in short, the working of DENDRAL
       and MYCIN.
       Discuss the concept of uncertainty in expert system.

5 Write notes on any four of the following: 10×2=20
   (i)  Speech recognition
   (ii)  Machine perception
   (iii) Program structure in PROLOG
   (iv)  List manipulation features in LISP
   (v)   Line Finding.