DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VII [IT]
SUBJECT: (IT714) KNOWLEDGE SYSTEMS

Examination	**: First Sessional**	**Seat No.**	**: _____**
Date	**: 04/08/2017**	**Day**	**: Friday**
Time	**: 1:15 to 2:30**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.

(a) Explore time and space complexity for bidirectional search algorithm. **[2]**

(b) Define Monotonic and Non-monotonic production system with example. **[2]**

(c) When would best-first search be worse than simple breadth-first-search? **[2]**

(d) Is Iterative deepening DFS a complete algorithm? Justify with example. **[2]**

(e) Machine Translation **[1]**
a) Converts one human language to another
b) converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

(f) Co reference Resolution is **[1]**
a) Anaphora Resolution
b) Given a sentence or larger chunk of text, determine which words refer to the same objects (entities)
c) Both a) & b)
d) Neither a) nor b)

(g) Many words have more than one meaning; we have to select the meaning which makes the most sense in context. This can be resolved by **[1]**
(a) Fuzzy Logic
(b) Word Sense Disambiguation
(c) Shallow Semantic Analysis
(d) All of the mentioned

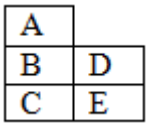
(h) How can we avoid infinite loop problem in Depth First Search algorithm? **[1]**

Q.2 Attempt ***Any Two*** from the following questions. **[12]**

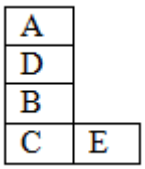
(a) (i) IR (information Retrieval) and IE (Information Extraction) are the two same things. State True or False with justification. **[2]**
(ii) Explain scope and attachment ambiguity with example. **[2]**
(iii) What is the ambiguity in the given phrase to reference with natural language processing? "John and Mary are married." **[2]**

(b) Given a state space and heuristic values in fig.1, apply A* algorithm and find the solution path from Start to Goal. Clearly maintain OPEN and CLOSED nodes. **[6]**

(c) Define the heuristic function for given block world problem and apply hill climbing to find solution. **[6]**



Start



Goal

Q.3 (a) What are the components of production system? Explain each by taking missionary and cannibals as a problem. **[8]**

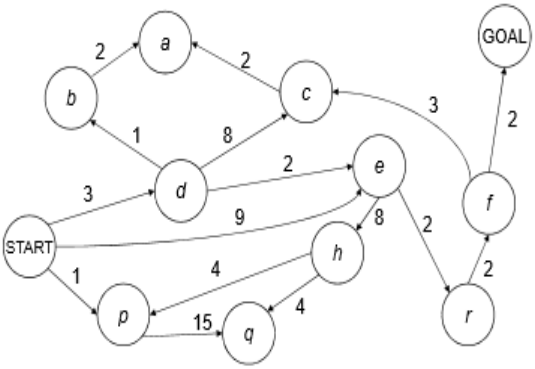
(b) What is the role of fail predicate in PROLOG? Explain with example. **[4]**

OR

Q.3 (a) Analyze Eight tiles puzzle with respect to seven characteristics of problem. **[8]**

(b) Assume that a given PROLOG program, following family relationship are defined: **[4]**

parent (Parent, Child)
Gender(Peerson, Gender)
Brother (Person1, Person2)
Use above relationships to define the following new relationships:
father (Father, Child)
son (Son, Parent)
uncle (Uncle, Niece)
grandfather(Grandfather, Grandchild)



h(a)	20	h(f)	2
h(b)	20	h(h)	20
h(c)	21	h(p)	2
h(d)	8	h(q)	10
h(e)	6	h(r)	2
h(start)	1	h(Goal)	0

Fig.1