

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION-2023

M.Tech-II Semester (CSE)

COURSE CODE (CREDITS): L-22MIWCL233

MAX. MARKS: 35

COURSE NAME: Knowledge based AI: Cognitive Systems

COURSE INSTRUCTORS: Dr. Nishant Sharma

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. (A) Explain about 4 schools of thoughts in artificial intelligence. Provide an answer with suitable examples for each. [3 + 2 marks] [CO-1]

(B) Explain in detail about cognitive system architecture with proper illustrations and suitable example. [3 marks] [CO-1]

Q2. What are semantic networks? Also, explain characteristics of a good knowledge representation. Construct a semantic network to describe relationship among nodes based on raven's test of intelligence. [2 +2 + 3 marks] [CO-2]

Q3. Describe a complex frame system with a suitable example. Write a frame representation of storylines given below:

"The 7.8-magnitude earthquake that struck southern Turkey and northern Syria in early February killed tens of thousands of people, flattened wide areas of cities and sent the region, which was already grappling with a refugee crisis and over a decade of war, into a monumental recovery effort. Turkey has imposed a three-month state of emergency in 10 provinces, and the national emergency agency has distributed a huge quantity of tents and mobilized thousands of vehicles, including excavators, cranes and tow trucks, with the help of more than 230,000 relief workers. Dozens of countries have sent teams and supplies, and a makeshift health care system has sprung up."

[3 + 4 marks] [CO-3]

Q4. Explain following concepts in context with cognitive systems using suitable examples.

1. Common sense reasoning
2. Case retrieval using nearest neighbor.
3. Using nearest neighbor method in k-dimensional space.
4. Using heuristics and classification for concept learning.

[4*2 marks] [CO-4]

Q5. (A) Describe in detail different components involved in formal notation of logic.

(B) Use a suitable example to describe application of rules of inference to prove a claim.

[3 + 2 marks] [CO-5]