

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - V Computer Science & Engineering : SUMMER : 2025
SUBJECT: ITC-III: ARTIFICIAL INTELLIGENCE

Day : Monday
Date : 19/05/2025

S-25592-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

Q.1 Define PEAS in detail. Also represent following terms in PEAS format [10]

- i) Automated Taxi Driver
- ii) Vacuum Cleaner
- iii) Refinery Controller
- iv) Soccer Player Robot

OR

Q.1 Define Artificial Intelligence. Discuss the tic-tac-toe problem in detail and explain how it can be solved using AI techniques. [10]

Q.2 List Inform Search Techniques. Explain the Concept of A* algorithm with suitable example? [10]

OR

Q.2 What is heuristic search? How it is calculated. Explain best fist search technique using example. [10]

Q.3 Explain Iterative Deeping search method with suitable example. [10]

OR

Q.3 Explain Alpha-Beta Pruning with example in Artificial Intelligence. [10]

Q.4 Write Rule for introduction and Elimination of \rightarrow . Also prove given examples [10]
using natural deduction rules

- i) $p \rightarrow q \vdash (q \rightarrow r) \rightarrow ((r \rightarrow s) \rightarrow (\neg s \rightarrow \neg p))$
- ii) $p \wedge q \vdash (p \rightarrow q) \wedge (q \rightarrow p)$
- iii) $\neg(\neg p \wedge \neg q) \vdash p \vee q$
- iv) $p \rightarrow \neg q \vdash (p \wedge q) \rightarrow r$

OR

Q.4 List different approaches to knowledge representation. Explain any one [10]
Knowledge representation approach in detail?

P.T.O.

Q.5 Consider the following sentences: [10]

- i) John likes all kind of food
- ii) Apples are food
- iii) Chickens is food
- iv) Anything anyone eats and is not killed by is a food
- v) Bill eats peanuts and is still alive
- vi) Sue eats everything Bill eats
 - Conversion of sentences into formulas in predicate logic.
 - Prove that John like Peanut using backward chaining

OR

Q.5 Describe Dempster-Shafer theory. Use DST to find out the measure of belief m_3 ? [10]
Given that $m_1 = \{\text{abbot, babbot}\} = 0.8, \theta = 0.2, m_2 = \{\text{abbot, cabbot}\} = 0.7, \theta = 0.3$.

Q.6 Explain Architecture of Expert system? Give its 3 application areas. [10]

OR

Q.6 List Expert Systems Examples? Discuss in detail expert system shells. [10]

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