



**ACE**  
**Engineering College**  
**An Autonomous Institution**  
**Ankushapur (V), Ghatkesar (M), Medchal Dist. – 501 301**

**ASSIGNMENT – 2**

**Last Date of Submission:** 17 – 11 – 2025

**Course:** DS512PE Artificial Intelligence

1. Explain the concepts of ontological engineering, categories and objects, events, mental events and mental objects in knowledge representation. Discuss the steps in the knowledge-engineering process.
2. Construct the planning graph (GraphPlan) for a small example (e.g., two blocks and a table - blocks-world) up to level 2 and show how mutual exclusions (mutex) are represented. Explain how GraphPlan uses the planning graph for solution extraction.
3. State Bayes' rule. A diagnostic test has sensitivity 0.95 and false positive rate 0.10 for a disease whose prior prevalence is 1%. Compute the posterior probability that a patient has the disease given a positive test and interpret the result.
4. Explain the semantics of Bayesian networks. For a small BN (3–4 nodes), show how the joint probability factorises.

**Note:**

All assignments must be submitted on or before **17-11-2025**; late submissions will not be accepted, and students who fail to submit will receive 0 marks.

**Presentation Guidelines:**

- Use **A4 sheets**. Write your **Name, Roll Number, Section, and Department** clearly on the first page.
- Maintain **logical flow and neat presentation** throughout.

**Caution Note:**

- There is **no probability or almost no probability** that the *same or similar questions* will appear in the **upcoming Mid-Semester Examination**.
- The purpose of this assignment is **conceptual understanding and practice**, *not the prediction of exam questions*.