

Bachelor Level / fourth-semester / Science  
Computer Science and Information Technology (CSC262)  
Theory of Computation

Candidates are required to give their answers in their own words as far as practicable.  
The figures in the margin indicate full marks.

**Section A**

Attempt any Two questions. (2x10=20)

- 1** Define state space graph. Differentiate between A\* search and greedy best first search.
- 2** What do you mean by unification and lifting ? Convert following sentences into FOPL Sushma likes all kinds of practical courses. AI and DBMS are practical courses. Any subject anyone practices is practical course. Ruby practices PHP. Rita practices everything that Ruby practices. Using resolution check whether "Sushma likes PHP" is inferred or not.
- 3** Differentiate supervised learning from unsupervised? Discuss how Naïve Bayes Model can be used for machine learning ? Support your answer with example.

**Section B**

Attempt any Eight questions. (8x5=40)

- 4** How can you define AI from the dimension of behavioural process? When a machine is said to pass Turing Test?
- 5** What is an agent ? How utility agent works? Give an example of utility agent.
- 6** What is game search? How minmax search used in game playing ? Illustrate with an example.
- 7** What is semantic network? Given following knowledge base, represent it using semantic network Subash is a student. All students are person. Person has hair. Ram is a player. All player play game. Game is a physical action. Height of all players is larger than the height of all student. Physical action starts from 7:00 AM and ends at 9:00 AM.
- 8** Discuss how genetic algorithm works?
- 9** Using your own assumptions, design PEAS framework for following intelligent agents. a. Medicine delivery drone  
b. Covid medicine prescriber.
- 10** What is machine vision? Describe the components of machine vision.
- 11** How natural language generation differs from natural language understanding ? How morphological analysis done in NLP ?