

H

Roll No.

TCS-701

B. TECH. (CSE)

(SEVENTH SEMESTER)

END SEMESTER EXAMINATION, 2021-22

ARTIFICIAL INTELLIGENCE

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

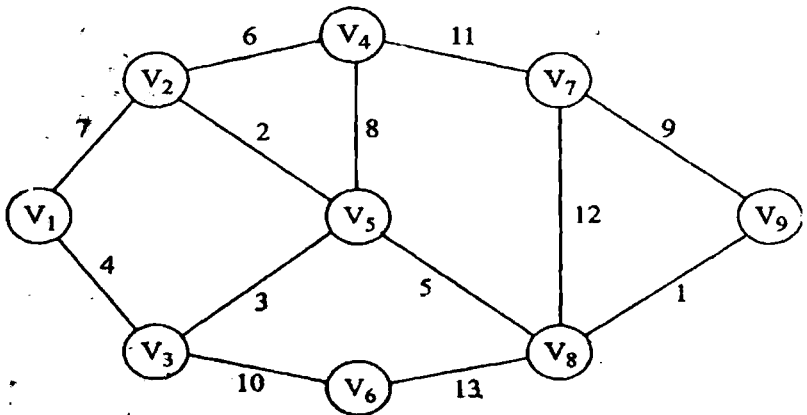
**(ii) Answer any *two* sub-questions among
(a), (b) and (c) in each main question.**

**(iii) Total marks in each main question are
twenty.**

(iv) Each question carries 10 marks.

- 1. (a) Discuss application areas of Artificial Intelligence. Also discuss some of the recent industrial applications. (CO1)**

- (b) Differentiate between BFS and DFS.
Apply both of the algorithms in the following graph : (CO1)



- (c) Write and explain the A* algorithm. What are the uses of heuristic search ? (CO1)
2. (a) What is Natural Language Processing ? Explain the concepts of Natural Language Understanding and Natural Language Generation. (CO2)
- (b) "Natural Language Processing is a hard task due to presence of ambiguity." Justify the statement. (CO2)

- (c) What are the various phases of Natural Language Processing ? Explain context free and transformational grammars in detail. (CO2)
3. (a) What are various techniques used for knowledge representation ? Also discuss advantages and limitations of each of the techniques. (CO3)
- (b) Convert the following sentences into predicate logic : (CO3)
- Marcus was a man.
 - Marcus was a Pompeian.
 - All Pompeians were Romans.
 - Caesar was a ruler.
 - All Pompeians were either loyal to Caesar or hated him.
- (c) Write the Resolution Algorithm used for unification purpose. Give an example. (CO3)
4. (a) What is an expert system ? Describe various components of an expert system. (CO4)

- (b) For which applications, DENDRAL expert system was devised ? Describe the inference engine of the DENDRAL expert system. (CO4)
 - (c) Describe any *four* tools used to develop an expert system. (CO4)
5. (a) Define the term Pattern Recognition. Describe any *four* recent applications of Pattern Recognition. (CO5)
- (b) With suitable examples, explain the complexities involved in design of a speech recognition system. (CO5)
 - (c) Explain some of the features of LISP and PROLOG used to develop Artificial Intelligence applications. (CO5)