WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 6th Semester Examination, 2021

CMSACOR13T-COMPUTER SCIENCE (CC13)

ARTIFICIAL INTELLIGENCE

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
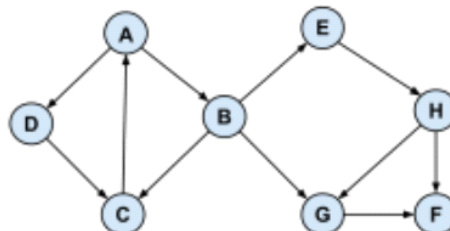*All symbols are of usual significance.*

GROUP-A

1.   Answer any *four* questions from the following   2×4 = 8

   (a) What is local maxima problem?

   (b) What do you mean by "thinking rationally"? How does it differ from "acting rationally"?

   (c) Differentiate between the Deterministic and Stochastic environments with example.

   (d) What are the time and space requirements of depth first search algorithm?

   (e) What is a frame problem?

   (f) What is state space search for water jug problem?

   (g) In which condition, A* algorithm behave like Greedy Search?

   (h) What do you mean by intelligent agent?
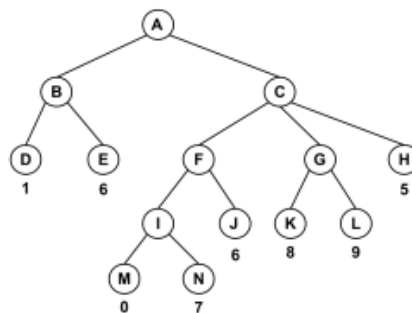
GROUP-B

Answer any *four* questions from the following   8×4 = 32

2. (a) How AI handles reasoning under uncertainty? Explain with examples.   3

   (b) How problem characteristics help in the selection of AI technique? Explain these characteristics with possible examples.   2+3

3. (a) What is the difference between uninformed and informed search? Explain with examples.   4

   (b) Consider the following graph. Consider that we always choose the vertices in alphabetical order. Show the BFS search trees starting from node A to reach node F.   4

4. (a) Explain Architecture of an Expert System. 3

(b) Where are Expert Systems used? 2

(c) Explain various approaches and properties of knowledge representation. 3

5. (a) Explain Hill Climbing Search Technique. 4

(b) Discuss how you can design new heuristics by relaxing the constraints of a problem with respect to 8-puzzle problem. 4

6. (a) Convert the following sentences into predicate logic and then its clause form: 6

(i) Coconut is a biscuit

(ii) All birds cannot fly

(iii) Rita loves child who takes biscuits

(iv) For a triangle ABC it is given that sum of interior angle is 180 degree.

(b) Define frame. 2

7. (a) What is Pruning? 2

(b) Consider the following game tree in which static scores are all from first players point of view. Which branches will be pruned if α-β pruning algorithm is used? 6

8. Write short notes on the following (any *two*) 4+4

(a) Uniform cost search

(b) A* algorithm

(c) Constraint satisfaction problem.

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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