PG/IIS/COS/203/25

# M.Sc. 2nd Semester Examination, 2025

## COMPUTER SCIENCE

PAPER—COS-203

*Full Marks* : 50

*Time* : 2 hours

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

## GROUP – A

Answer any **four** questions : $2 \times 4$

1. What is the difference between uninformed and informed search ?

2. Why Iterative Deeping search is better than Depth First search ?

3. What is Local search ? Why it is called local search ?

4. Show the truth table of bi-implication connective.

5. What are the differences between prediction and forecasting ?

6. What do you mean by elitism ?

## GROUP – B

Answer any four questions : 4 × 4

7. A large software development company employs 100 computer programmers. Of them, 45 are proficient in Java, 30 in C#, 20 in Python, six in C# and Java, one in Java and Python, five in C# and Python, and just one programer is proficient in all three languages above.
Determine the number of computer programmers that are not proficient in any of these three languages.

8. Translate following English sentence into predicate logic : 2 + 2

   (*a*) Every real number has its corresponding negative.

   (*b*) There is somebody whom no one loves.

9. What is the drawback of Roulette wheel selection in Genetic Algorithm ? In which selection this drawback is overcome and how ? 1 + 3

10. Define α-cut and string α-cut with example. 2 + 2

11. Devise logical AND logic using single neuron model. 4

12. A farmer wishes to carry a wolf, a duck and corn across a river, from the south to the north shore. The farmer is the proud owner of a small rowing boat called Bounty which

he feets is easily up to the job. Unfortunately the boat is only large enough to carry at most the farmer and one other item. Worse again, if left unattended the wolf will eat the duck and the duck will eat the corn. How can the farmer safely transport the wolf, the duck and the corn to the opposite shore ?

Show the problem and formulate it as state space search problem. 2 + 2

## GROUP – C

**Answer any two questions :** 8 × 2

13. Write short notes on (any *four*) :

(*a*) Bandwidth in fuzzy set

(*b*) Consistent heuristic

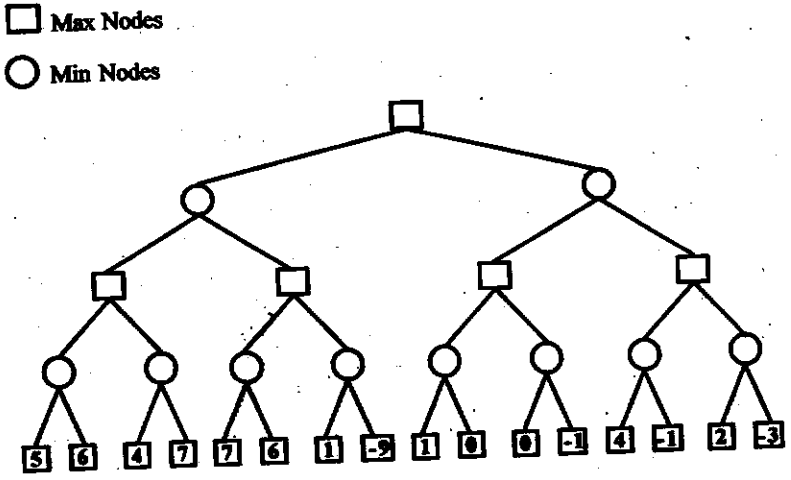
(*c*) Fuzzy complement

(*d*) Recurrent neural network

(*e*) Tabu search

(*f*) Uniform crossover.

14. Apply alpha-beta pruning on the following game tree considering first node as MAX and identify which are alpha cut offs and which are beta cut offs ? 8




15. Show that greedy best first is not optimal with an example. How this drawback can be overcome ? Give an example to show that the search is optimal. 3+2+3

16. How a single layer perception is trained ? Give algorithm.

[ Internal Assessment – 10 Marks ]

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