APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : 08CSE19-6032-1 (Pages: 2) Name: ....

Reg. No:.........................

SECOND SEMESTER M.TECH. DEGREE EXAMINATION MAY 2019

Branch: Computer Science and Engineering Specialization: Computer Science and Engineering

08 CS 6032 EVOLUTIONARY COMPUTING

(Common to CSE)

Time: 3 hours Max. marks: 60

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Compare evolutionary programming and genetic programming based on its relevance.	3

Answer b or c

b	Explain the reason for the evolution of EC techniques and how the features of EC technique can be used for solving NP problems?	6
c	What are the advantages of EC techniques over traditional methods of problem solving?	6

Q.no.	Module 2	Marks
2.a	Compare plateau and ridge in hill climbing.	3

Answer b or c

b	You have 2 jugs-a 4 litre one and a 3 litre one and a water faucet. No measuring marks are there on the jug. You can fill the jugs up or empty them out to another jug or on to the ground. You need to measure exactly 2 litres in 4 litre jug. Using hill climbing technique , solve the problem.	6
c	What are the parameters used in simulated annealing technique and what are the criteria for selecting the parameters.	6

Q.no.	Module 3	Marks
3.a	Which one is better "crossover or mutation"?	3

Answer b or c

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b	For the given two parents, find atleast two offsprings for the next generation. Given the position of alleles of two parents 123456789 and 937826514.Apply any explorative method.	6

c What is the mathematical proof of survivability of next generation after applying genetic algorithm for the current generation?   **6**

Q.no.	Module 4	Marks

4.a What is the relevance of pheromone deposit, evaporation and updation in ACO?   **3**

<div align="center">Answer b or c</div>

b Using ACO, solve the TSP problem for the following graph. Given $\alpha=1$, $\beta=1$, $\rho=0.5$.   **6**
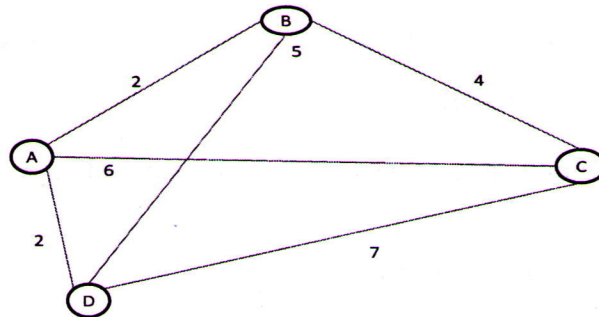
c Explain Minmax ACO algorithm. Explain how the enhancement is made in ACO and what is its relevance?   **6**

Q.no.	Module 5	Marks

5.a Explain proximity principle, stability principle and adaptability principle of swarm intelligence.   **4**

<div align="center">Answer b or c</div>

b Suggest any one variation in PSO algorithm to enhance PSO.   **8**

c What are the different features of PSO algorithm? Differentiate lbest, pbest and gbest and how it varies according to the change in topologies?   **8**

Q.no.	Module 6	Marks

6.a What are the functions of employed, onlooker and scout bees?   **4**

<div align="center">Answer b or c</div>

b Explain ABC algorithm and its working? What is the fitness function used so as to improve the performance of the algorithm?   **8**

c Suggest a method for solving any NP problem with ABC algorithm. Explain with example based on fitness of each and every next generation.   **8**