Assignment Sheet
EVEN Semester 2021
B.Tech CSE 6th Semester

Course: Artificial Intelligence Lab
CourseCode: 15B17CI574

Instructions:

- Students have to do a mini project apart from the Lab Assignments.
- The evaluative lab assignments must be submitted as per the given deadline.
- The total weightage of all day-to-day work is 60 Marks.
- There will be two lab tests of 20 marks each.
- Absence in LabTest-2 means Fail in the lab course.
- All students are required to attend atleast 80% labs. 15 marks are reserved for attendance.

Week-5 March 1-6, 2021

EXERCISE

Ques 1: Design a GA for travelling salesman problem. Your solution should contain different functions for:

- Initializing Population
- Fitness Computation
- Selection for reproduction
- Crossover
- Mutation.

Ques 2: Consider a card splitting exercise, which is as detailed here: You have 10 cards numbered 1 to 10 and have to divide them into two piles so that: The sum of the first pile is as close as possible to 36 and the product of all in the second pile is as close as possible to 360. Solve this logic problem using GA.

Ques 3: Implement GA for coin change problem which is stated below: The change-making problem addresses the question of finding the minimum number of coins (of certain denominations) that add up to a given amount of money. Coin values can be modeled by a set of n distinct positive integer values (whole numbers), arranged in increasing order as w1= 1 through n. The problem is: given an amount W, also a positive integer, to find a set of non- negative (positive or zero) integers {x1; x2; ..., xn}, with each xj representing how often the coin with value wj is used, which minimize the total number of coins.

$$Minimize \sum_{j=1}^{n} x_j \qquad subject\ to \sum_{j=1}^{n} w_j x_j$$