Computer Science and Engineering Department, SVNIT - Surat
Mid Sem Examination- September - 2021
B.Tech. IV – Sem. - VII
Course: Principles of Programming Languages (CO405)
Section A

Date: 29th September 2021 **Marks:** 15

Instructions:
1. Write your Admission No/Roll No and other details clearly on the answer books.
2. Be precise and clear in answering the questions.
3. Support your answer with necessary diagrams and examples.

Q1 Answer the following questions:

1. Consider the following program: [4]

func(1, mon).
func(swi(1), tue).
func(swi((1)), thur).
func(swi(swi(swi(X))), N) :-
func(x, N).

How will Prolog answer the following questions? Whenever several answers are possible, give at least two.

(a) ?- func(swi(1), A).
(b) ?- func(swi(swi(l), tue).
(c) ?- func(swi(swi(swi(swi(swi(swi(1)))))), C).
(d) ?- func(D, thur).

2. (a) State the advantages of predicate logic over propositional logic. [3]

(b) Given the English Facts:

- Rita is 21 years old.
- Every Indian who is more than 18 years can vote.
- Rita and Sita belong to India.
- Rita and Sita are twin Sisters.

Convert the above facts into Predicate logic and CNF Form

3. Write a PROLOG program for the Railway Reservation System: [4]

The database has entries of the customer and their train in following format:
Reservation(Traveler (Name, Contact_No.),Train(Train_no.,Train_name, Source, Destination, Date of Travel(dd,mm,yyyy), Total Fare, Reservation Status))

1. Print the names of Travelers having trains on 22th Oct 2021 having 'Confirm (CNF)' as Reservation Status. (Output -> (alex, 9999, 44711, ADIEXP, … , CNF).).
2. Print all the trains from 'Surat' to 'Mumbai' having fare less than 1000. (Output ->(List = [Satabdi/44711, Puri/50815]).).
3. Display all details of travelers having reservation status as 'Waiting (WL)'. (Ouput -> (List = [Jeff, 9999, 44711, ADIEXP, … , WL]).).

4. a) Write a goal, using conc, to delete the last three elements from a list L producing another list L1. Hint: L is the concatenation of L1 and a three-element list (Output -> L = [1, 2, 3, a, b, c]). [4]

b) Write a sequence of goals to delete the first three elements and the last three elements from a list L producing list L2 (Output -> L = [a, b, c, 1, 2, 3], L1 = [1, 2, 3, a, b, c]).