

2022**M.Sc.****4th Semester Examination****COMPUTER SCIENCE****PAPER—COS-494****AI LAB***Full Marks : 25**Time : 2 Hours*

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

1. Answer any one question : 1×20

- (a) The following picture shows who is sitting at the Gryffindor table. Define the functor `sits_right_of/2` to represent who is sitting right whom. `sits_right_of(X,Y)` should be true if X is to the right of Y.

(Turn Over)

Katie Bell

Natalie McDonald

Ron Weasley

Hermione Granger

Harry Potter

Colin Creevey

Seamus Finnigan

Angelina Johnson

Ginny Weasley

Parvati Patil

Lavender Brown

Neville Longbottom

Alida Spinnet

Fred Weasley

George Weasley

Lee Jordan

Dennis Creevey

Dean Thomas

(b) This is tomorrow's lunch menu:

Starters

Green salad

melon salad

tomato salad

papri chat

Main dishes

Fried rice and chili chicken

Chicken biriyani

Rock salmon with mayonnaise and capers

Pasta, courgette and cheese bake

Desert

Cheese

mango yoghurt

Black forest pastry

You are allowed to take one starter, one main dish, and one desert. Use the predicates starter/1, main/1, and desert/1 to represent tomorrow's options in Prolog.

If you are very hungry, you can have one starter, one main dish, and one desert. If you are not so hungry (or have a course right after

lunch), you might want to only have a starter and a main dish or a desert and a main dish. If you are currently on a diet, it's probably wisest to only take a starter.

Define a predicate `menu/4` which finds menus for you depending on whether you are hungry, not so hungry or on a diet. So, `menu(Status,X,Y,Z)` should be true if Status is hungry and X, Y, Z are a starter, a main dish and a desert, respectively. It should also be true if Status is not so hungry, and either X is a starter, Y a main dish, and Z is nothing or X is nothing, Y is a main dish, and Z is desert. Finally, `menu(Status,X,Y,Z)` should be true if Status is on diet, X is a starter and Y and Z are nothing.

- (c) Write a prolog function to remove duplicates from a list :

? - `remdups([1,3,4,2,4,3,6,8,6,5,4,3,4,9],X)`

X = [1,8,6,5,2,3,4,9]

(d) We are given the following knowledge base of travel information :

byCar(auckland,hamilton).

byCar(hamilton,raglan).

byCar(valmont,saarbruecken).

byCar(valmont,metz).

byTrain(metz,frankfurt).

byTrain(saarbruecken,frankfurt).

byTrain(metz,paris).

byTrain(saarbruecken,paris).

byPlane(frankfurt,bangkok).

byPlane(frankfurt,Singapore).

byPlane(paris,losAngeles).

byPlane(bangkok,auckland).

byPlane(losAngeles,auckland).

Write a predicate `travel/2` which determines whether it is possible to travel from one place to another by 'chaining together' car, train, and plane journeys. For example, your program should answer yes to the query `travel(valmont,raglan)`.

[VIVA - 5]
