In-Course Assessment Examination – I

IT3113(P) Knowledge Based Systems and Logic Programming

Time Allowed: 40 minutes   **November 2024**

1. Consider the following information about European countries, their area (in square kilometers), population, and neighboring countries:

Country	Area (sq km)	Population	Neighbor Countries
Austria	83,858	8,169,929	Switzerland
France	547,030	63,182,000	Switzerland, Germany, Spain
Germany	357,021	83,251,851	Switzerland
Italy	301,230	59,530,464	Switzerland
Liechtenstein	160	32,842	Switzerland
Spain	504,851	47,059,533	-
Switzerland	41,290	7,507,000	-
United Kingdom	244,820	61,100,835	-

a. Define the facts area, population, and neighbors for each country with respective arguments.   [25%]

b. Write a rule to find the neighbouring countries.   [10%]
   Hint: If A is the neighbor of B then B is the neighbor of A and the vice versa.

c. Find the neighbouring states of Germany with the help of the rule defined in part(b).   [10%]

d. Write a rule for finding the density for each of the country.   [15%]
   Hint: (Density $= \frac{Population}{Area}$)

e. Are there any neighbors of Switzerland with a higher population and a larger area than Switzerland? [20%]

f. Are there any neighbors of Spain with a higher density than Spain?
[20%]