PS-1

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Q1)

import networkx as nx  
import pandas as pd  
import matplotlib.pyplot as plt  
import numpy as np  
  
  
  
adj = np.matrix([[0,0,0,0,1,1],[0,0,1,0,0,1],[0,1,0,1,0,0],[0,0,1,0,1,0],[1,0,0,1,0,0],[1,1,0,0,0,0]])  
print(adj)  
  
G = nx.from\_numpy\_array(adj)  
  
layout = nx.spring\_layout(G)  
nx.draw\_networkx(G, layout, with\_labels=True , node\_shape = 'o', node\_size = 200, font\_size = 10, font\_weight = 'bold')

Q2)

import pandas as pd  
import networkx as nt  
import numpy as np  
import matplotlib.pyplot as plt  
  
xls=pd.ExcelFile("Z:\Sem - 5\SNDA\_lab\SNDA\_PS-1\_02\_excel.xlsx")  
  
for sheet in xls.sheet\_names:  
    df=pd.read\_excel(xls,sheet,index\_col=0)  
    mat=df.values  
    labels=df.columns.tolist()  
    labels1={i:label for i,label in enumerate(labels)}  
    g=nt.from\_numpy\_array(mat)  
    layout=nt.spring\_layout(g)  
    nt.draw\_networkx(g,layout,with\_labels=True,labels=labels1)  
    plt.show()

Q3)

import networkx as nx

import numpy as np

dt={'SRI': ['UCSB', 'UCLA', 'UTAH'], 'UCSB': ['UCLA'], 'UCLA': ['RAND'], 'RAND': ['SDC', 'BBN'], 'SDC': ['UTAH'], 'BBN': ['HARVARD', 'MIT'], 'MIT': ['UTAH'], 'IPTO': []}

g=nx.Graph(df)

nx.draw\_networkx(g)

Q4)

import networkx as nx

import numpy as np

lbs=[]

for i in range(97,110):

  lbs.append(chr(i))

g=nx.complete\_graph(13)

mapping = {

    0:"A",

    1:"B",

    2:"C",

    3:"C",

    4:"D",

    5:"E",

    6:"F",

    7:"G",

    8:"H",

    9:"I",

    10:"J",

    11:"K",

    12:"L",

    13:"M"

}

g=nx.relabel\_nodes(g,mapping)

nx.draw\_networkx(g)