Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2025-26

Class:	AI	**Semester:**	VII
Course Code:	CSC702	**Course Name:**	BDA

Name of Student:	BARI ANKIT VINOD
Roll No. :	61
Assignment No.:	6
Title of Assignment:	
Date of Submission:	8/10/25
Date of Correction:	9/10/25

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Completeness	5	4
Demonstrated Knowledge	3	2
Legibility	2	2
Total	10	8

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Completeness	5	3-4	1-2
Demonstrated Knowledge	3	2	1
Legibility	2	1	0

Checked By

Name of Faculty : Ms. Sweety Patil

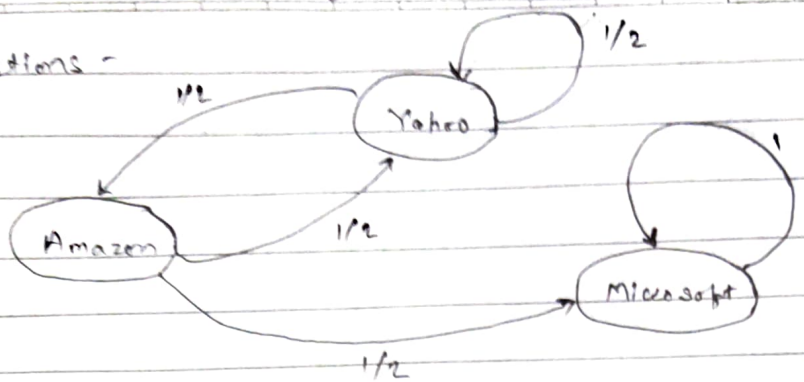
Signature :

Date : 9/10/25

Assignment No. 6

- BBA

Q 1) Questions -



Using the web graph shown below, compute the page rank at every node.

→ • Nodes : Amazon (A), Yahoo (Y), Microsoft (M)

Sl- links - Yahoo → Yahoo (1/2), Yahoo → Amazon (1/2)

Amazon → Yahoo (1/2), Amazon → Amazon (1/2)

Microsoft → Microsoft (1)

Sl- for amazon -

$$PR(A) = \frac{1}{2} PR(Y) \quad = x = \frac{1}{2} y$$

- for Yahoo - $PR(Y) = \frac{1}{2} PR(Y) + \frac{1}{2} PR(A)$

$$\rightarrow y = \frac{1}{2} y + \frac{1}{2} x$$

$$\frac{1}{2} y = \frac{1}{2} x \quad \therefore y = x$$

- for microsoft -

$$PR(m) = \frac{1}{2} PR(A) + 1 \times PR(M)$$

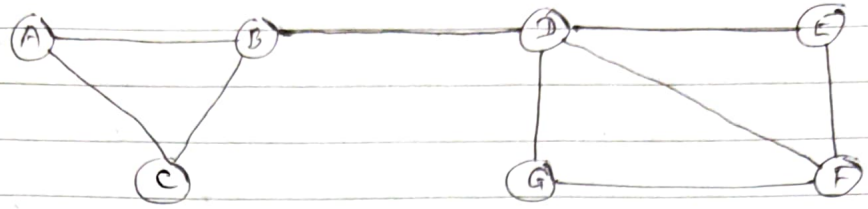
$$\rightarrow z = \frac{1}{2} x + z$$

$$\frac{1}{2} x = 0$$

$$\therefore x = 0$$

$\therefore$ PR(Microsoft) = 1, PR(Yahoo) = 0, PR(Amazon) = 0

Q. 2) For the given graph below use betweenness factor and find all communities.



→ S1 - Triangles -

(A, B, C) , (D, F, G)

∴ Bridge : edge B - D.

∴ So, edge B - D → graph betweenness because it connects it connects the two dense clusters.

S2: Apply girvan - newman algorithm -

∴ Remove edge B - D → graph splits into two communities -

Community 1 : {A, B, C}

Community 2 : {D, E, F, G}

S3:

Community	Nodes
1	{A, B, C}
2	{D, E, F, G}

S4: Final answers -

Part	Concept	Result
1	Page Rank	PR (Amazon) = 0 , PR (Yahoo) = 0 ,
2	Communities	{A, B, C} , {D, E, F, G}