Name: Sajawal Khan

ID: 14756

Department: BS(cs) 4th

Paper: DESIGN & ANALYSIS OF ALGORITHM

Date: _____ ①

Q1:-

(i) Vertex

(ii) Multiple / Parallel Edge

(iii) Adjacent edges.

(iv) Simple Path

(v) Cycle

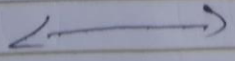
(vi) Source Node

(vii) Sink

(viii) Isolated or Null Graph

(ix) Regular Graph

(x) Labled Graph



(2)

Qs:-

① D-y*(F/G)

Sol:-

Pre fix:-

D-y x(F/G)

-D y x(F/G)

-D x y (F/G)

=D x y (/FG)

Post - fix:-

D-y x(F/G)

D y x(F/G) -

D y (F/G) x -

D y (FG/) x -

③

(ii) T/w^R+S*M-y^k

Sol:-

Pre fix:-

T/w^R+S x M-y^k

+T/w^R S x M -y^k

+T/w^R -S x M y^k

+/T w^R -S x M y^k

+/T W^R -x S M y^k

+/T^WR -x S M y^k

+/T^WR -x S M^ y k

+/T^WR -x S M^ y k

Post fix:-

T/w^R + S x M -y^k

T/w^R S x M -y^k +

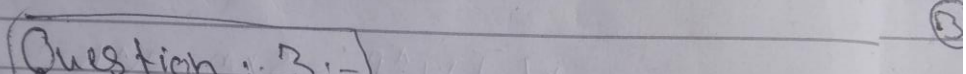
T/w^R S x M y^k -+

I W^R / SxM y^k -+

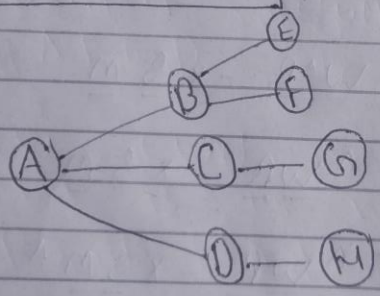
I W^R / SMx y^k -+

I WR^ / SMx y^k -+

I WR^ / SMx yk^ -+



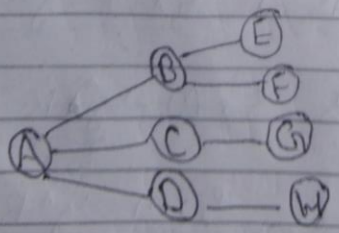
Question :- 3 :-



① Add Root A.

* Mark A

A is CWN



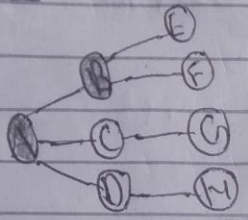
output sequence

A

(5)

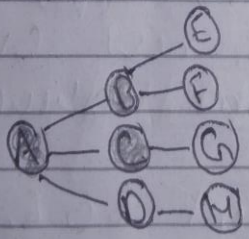
(2) A is adjacent to B,C,D
- Push B into sequence
- Mark B visited

[B]



(3) The adjacent node is now
- C is pushed into the Queue
- Mark C as visited
- C is added to output sequence

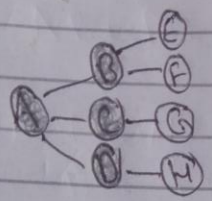
[B|C]



out put sequence
A, B, C

④ Now 2(D) is adjacent to A
* Push D into Queue
* Mark D visited
* Add D to output sequence

| B | C | D |

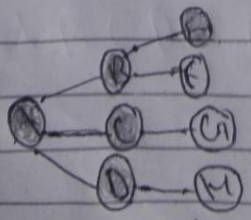


Output Sequence
A, B, C, D

→ Now CVN is update
→ Now B is new CVN
→ Pop B from Queue.

⑤ B is adjacent to E, F
* Push E into Queue
* Mark E as visited
* Add E to output sequence

| | C | D | E |

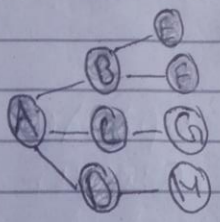


Output Sequence
A, B, C, D, E

(7)

(6) Select the adjacent node "F"
* Push F into Queue
* mark F as visited
* Add F to output sequence

	C	D	E	F	



Output Sequence
A, B, C, D, E, F

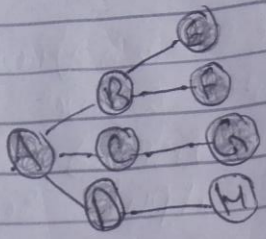
Update CWN to 'C'
Pop C from Queue

		D	E	F	

(7) Adjacent node is 'G' Now
* G is pushed in Queue
* Mark 'G' as visited
* Add G in output sequence

		D	E	F	G

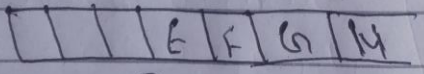
(8)

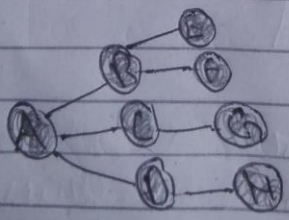


Output Sequence
A,B,C,D,E,F,G

→ Now CWN is updated to 'D'
→ Pop D from Queue

(8) 'H' is adjacent to 'D'
* Push H into Queue
* Mark H as visited
* add H to output sequence



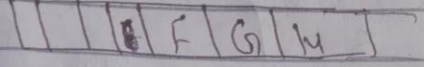


output Sequence

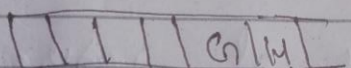
A, B, C, D, E, F, G

→ Now update CLN is E

→ Pop E from QUEUE

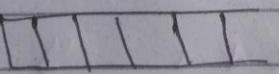


→ No adjesel to E
→ Update CLN to F
→ Pop F'

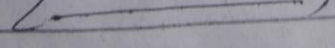


→ No adjecent to F
→ Update CLN 'G'
→ Pop G from QUEUE.

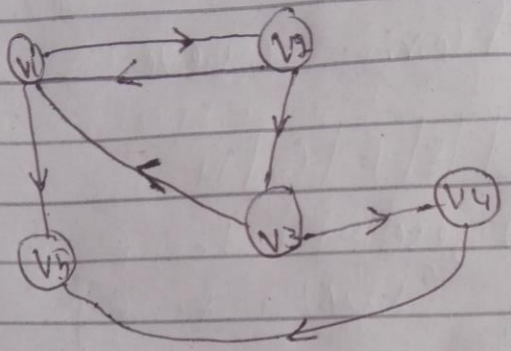
→ No adjecent to G
→ Update CLN 'M'
→ Pop M from QUEUE



→ No adjecent to M
→ QUEUE is empty. BFS Stops



Question 4:-



number of nodes = m = 5

order of A = m x m

= 5 x 5 = 25

	V1	V2	V3	V4	V5	
V1	0	1	0	0	1	2
V2	1	0	1	0	0	2
V3	1	0	0	1	0	2
V4	0	0	0	0	1	1
V5	0	0	0	0	0	0

indegree: 2 1 1 1 2

outorder: 7

Q5

$$A = \begin{bmatrix} 0 & 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

order of A = m * m
= 5 x 5
= 25

Number of Node = 5

Let Nodes be v_1, v_2, v_3, v_4, v_5