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Program : BSCS
ID : 14520
Semester : 4th
Paper : Final
Subject : Design & Analysis Of ALG

Q-NO-1

Ans:.

(1) Vertex
(2) Multiple / parallel Edge
(3) Adjacent edges
(4) Simple path
(5) Cycle
(6) Source Node
(7) Sink
(8) Isolated or Null graph
(9) Regular Graph
(10) Labeled Graph

Q-NO-2

Answer:-

(i) D-v * (F/G)

Pre-fix	Post-fix
D-y * (F/G)	Dy x (F/G)
- Dy * (F/G)	DY * (F/G)-
- Dxy (F/G)	Dy (F/G) *-
- D*y (/FG)	Dy (FG/) *-

(ii) T/w^R+S*M-Y^K

Prefix

T/w^R+S*M-Y^K

+ T/w^R S*M-Y^K
+/ Tw^R - S*MY^K
+/ T^wR - *SM^YK

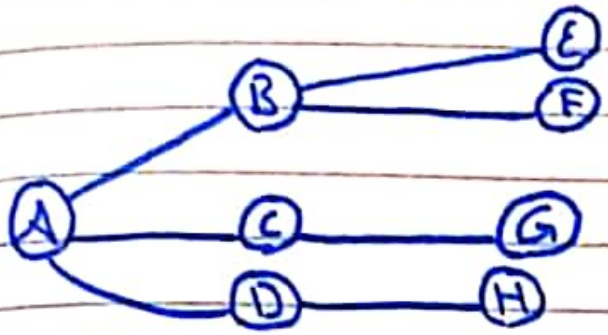
Post fix

T/w^R+S*M-Y^K
T/w^R S*M-Y^K+

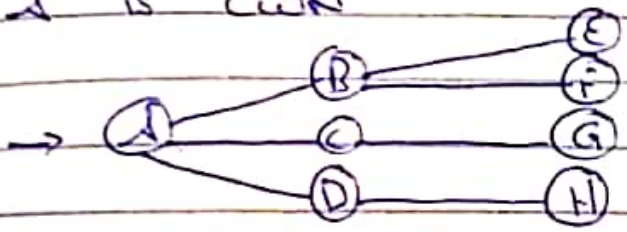
Tw^R/ S*MY^K-+

TwR^/ SM*YK^-+

Q.NO.3



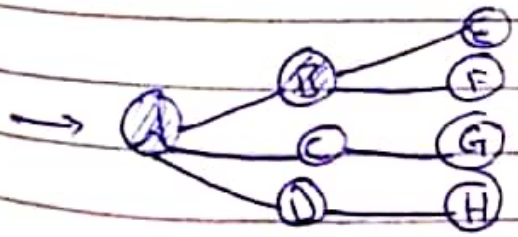
(1) Add Root A to the output Sequence
* Mark A visited
* A is CuON



Output Sequence
A

(2) A is adjecent to B, C, and D
* Select B and put it into queue

* Add B to the output Sequence
* Mark B visited



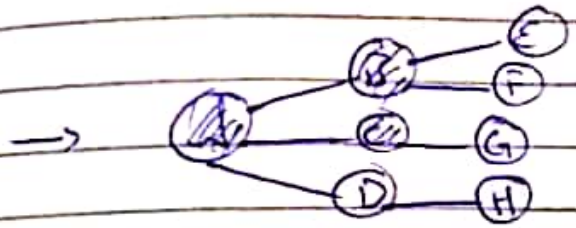
output Sequence
A, B

③ from CWN i.e 'A' the adjacent node is "C"

* 'C' is pushed into the Queue

B	C

* 'C' is marked visited
* 'C' is added to output sequence

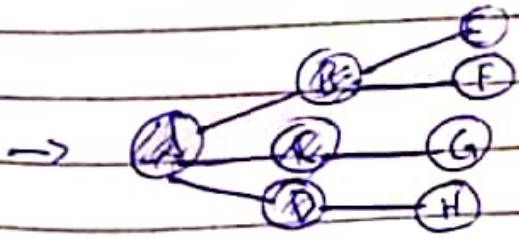


Output Sequence

A, B, C

④ As 'D' is also adjecent to 'A'

* D is mark visited
* D is added to the output Sequence



Output Sequence

A, B, C, D

* New CWN is updated
* 'B' is selected as new CWN

* 'B' is popped from Queue

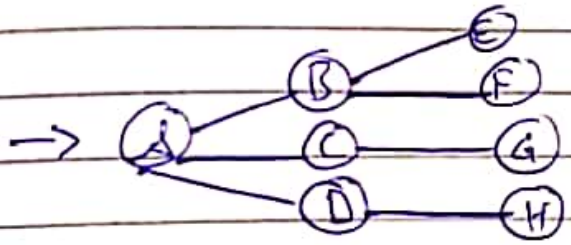
	C	D		

(3) of B is adjacent to E, and F

* 'E' is selected and pushed into the Queue

	C	D	E		

* 'E' is marked visited
* 'E' is added to output



Output Sequence

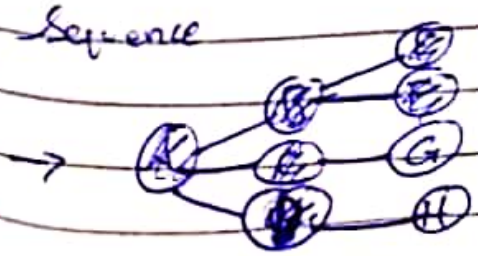
A, B, C, D, E

(3) from C.W i.e 'B' the adjacent node 'F' is selected

* 'F' is pushed into the Queue

	C	D	E	F	

* 'F' is mark visited
* 'F' is added to output Sequence



Output Sequence

A, B, C, D, E, F

* Now CUN is updated to 'C'
* 'C' is popped from Queue

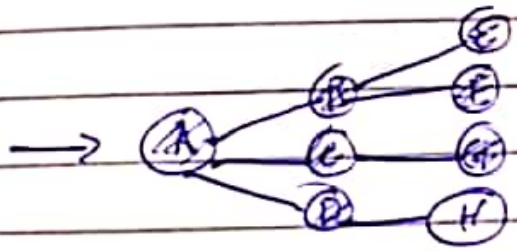
		D	E	F	

② From CUN i.e 'C', the adjacent node is 'B'.

* G is pushed into the Queue

		D	E	F	G

* 'G' is marked visited
* 'G' is added to output ~~Sequence~~



O.S :-

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

* Now CUN is updated to 'D'
* 'D' is popped from Queue

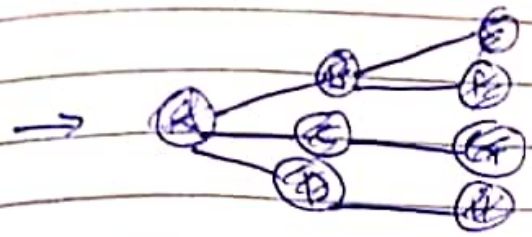
			E	F	G

② 'H' is adjacent node to 'D'

* 'H' is pushed to Queue

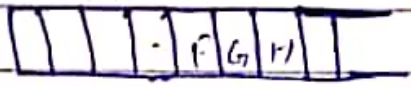
			E	F	G	H

* 'H' is visited mark
* 'H' is added to output sequence



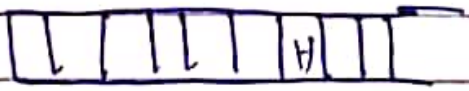
O.S :-
A, B, C, D, E, F, G, H

* Now CVN is updated to 'E'
* 'E' is popped from Queue



* No adjacent node to 'H'
* Now again CVN is updated to F.
* 'F' is popped from Queue

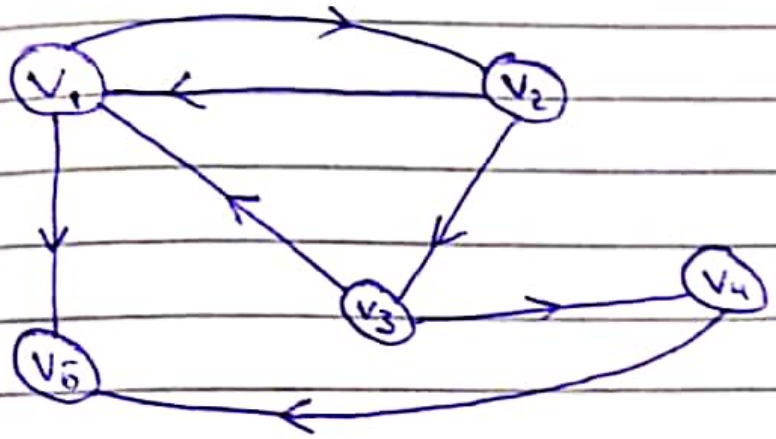
* No adjacent node to 'F'
* Now again CVN is updated to 'G'
* 'G' is popped from Queue



* No adjacent node to 'G'
* Now again CVN is updated to 'H'
* 'H' is popped from Queue

* No adjacent node to 'H'
* Queue is empty, so BFS Stops.

Q-NO-4



Indegree, 2 1 1 1 2

number of nodes, m = 5

order of A = m x m

= 5 x 5

= 25

	V1	V2	V3	V4	V5	out degree
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
						7

Q-No-5

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

As

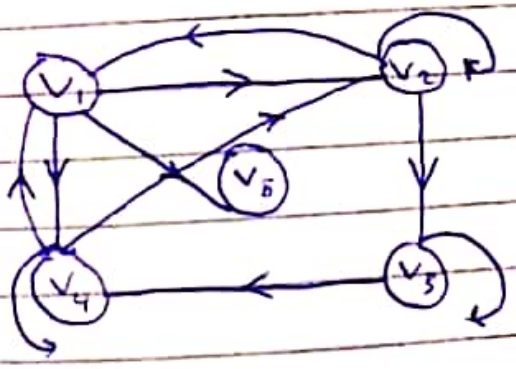
order of A = m x m

= 5 x 5

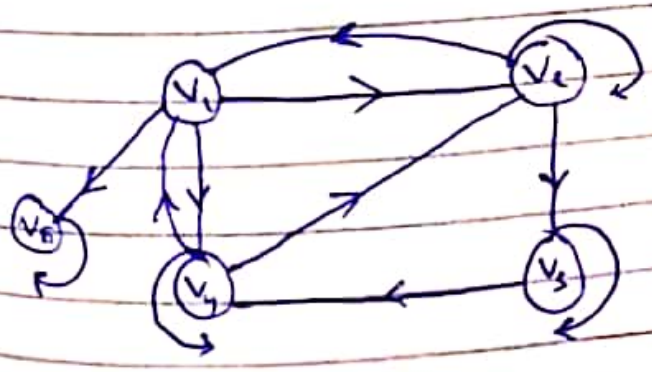
= 25

& number of nodes = 5

nodes = V_1, V_2, V_3, V_4, V_5



OR



The required graph.