

GROUP-B

2. Answer any **four** questions from the following: 6×4 = 24

- (a) If a simple regular graph has n vertices and 24 edges, find all possible values of n . 6
- (b) Let G be a graph of order 3 with respect to $V(G) = \{v_1, v_2, v_3\}$. The adjacency matrix $A(G)$ with respect to order set $\{v_1, v_2, v_3\}$ is given below. 6

$$\begin{pmatrix} 2 & 2 & 0 \\ 2 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

Show that G is disconnected.

- (c) Let u and v be two non-adjacent vertices in a graph G of order n such that $\deg(u) + \deg(v) \geq n$. Prove that $G + uv$ is Hamiltonian iff G is Hamiltonian. 6
- (d) Let G be a graph with $n (\geq 2)$ vertices. Then G has atleast 2 vertices which are not cut vertices. 6
- (e) Prove that a simple graph is bipartite iff all its cycles are even. 6
- (f) Draw the graph whose incidence matrix is given by 6

$$\begin{bmatrix} 0 & 0 & 1 & -1 & 1 \\ -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & -1 \\ 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 \end{bmatrix}$$

GROUP-C

Answer any two questions from the following 12×2= 24

- 3. (a) Let G be a p -regular graph of order $n \geq 2(p+1)$ for $p \geq 1$. Prove that the complement of G is Hamiltonian. 6+6
- (b) Prove that a connected graph with n vertices has atleast $(n-1)$ edges.
- 4. (a) Draw the complete graphs K_5 and K_6 . Also find the number of edges in the graphs K_{12} and K_{15} . 6+6
- (b) If G is a disconnected graph then prove that \overline{G} is a connected graph.
- 5. (a) For a simple graph G of order $n \geq 3$ and size m , show that for G to be Hamiltonian if $m \geq \frac{1}{2}(n-1)(n-2) + 2$. 8+4
- (b) Show that a bipartite graph cannot contain an odd cycle.

6. (a) Prove that the maximum number of edges in a simple graph with n number of vertices and k components can be $\frac{(n-k)(n-k+1)}{2}$. 5+7

(b) A salesman has to visit five cities namely A, B, C, D and E . Starting from the home city A and visiting each city exactly once, he has to return to the city A . The distances from one city to another are given below. Find the optimal route and minimum distance of the route.

	A	B	C	D	E
A	—	4	7	3	4
B	4	—	6	3	4
C	7	6	—	8	5
D	3	3	8	—	8
E	4	4	5	8	—

SEC2B

OPERATING SYSTEM : LINUX

GROUP-A

1. Answer any **four** questions from the following: 3×4 = 12
- (a) What is boot loader in Linux? 3
 - (b) What is a swap area? 3
 - (c) Explain the cut command. 3
 - (d) What is the core of the Linux Operating System? 3
 - (e) Explain command grouping in Linux. 3
 - (f) What is meant by Linux disk management? 3

GROUP-B

2. Answer any **four** questions from the following: 6×4 = 24
- (a) How can you determine the total memory used by Linux? 6
 - (b) Write a note on telnet, ftp, rsync and rsh. Why are these services called insecure services? 6
 - (c) Explain the following commands with examples: 6
 ls, rm, cp, mv, chown, chmod
 - (d) What are the common things between Linux and UNIX? 6
 - (e) Explain the Linux 'cd' command options along with the description. 6
 - (f) Enlist the features of the Linux operating system? 6

GROUP-C

Answer any *two* questions from the following

12×2 = 24

3. (a) Why is Linux considered more secure than other operating systems? 6
(b) Write a short note on Linux file permissions. 6
4. (a) Enlist some Linux distributors along with its usage. 6
(b) How pipes and redirection symbols work? Demonstrate with the help of examples. 6
5. (a) Discuss about disk drive partitions in Linux. 5
(b) Explain various disk related commands in Linux. 7
6. Write about the following Linux commands with examples: 12
cal, cd, cp, bc, pwd, mkdir, rmdir, md, cut, Is

—x—