SEAT No. _____ No. of Printed Pages: 02

[73]

SARDAR PATEL UNIVERSITY
BCA(SEMESTER-II)(NC) EXAMINATION ,April-2022
US02SBCA21 / Mathematics
28/04/2022 Time: 12:00 pm to 1:00 pm

Total Marks:35

Q-1 Select Appropriate Answer [05]

1 Dot product of u = (1, 2, 3), v=(0,-1,4) is_____
(a) 14 (b) (0, -2, 12) (c) (1, 1, 7) (d) 10

2 A vertex does not belongs to any edge is called_____
(a) trivial graph (b) isolated vertex (c)null graph (d) finite graph

3 An edge e is said to be bridge for connected graph G if G- e is
(a)Disconnected (b) closed (c) cycle (d) connected

4 Chromatic number is the_____number of color required to paint graph G.
(a) total (b) average (c) minimum (d) maximum

5 The median of 2, 4, 6, 1, 5, 3, 7 is_____
(a)3 (b) 4 (c) 5 (d) None

Q_2 Fill in the blanks and True/False [04]

1 Dot product of u=(0,,5,3) and v=(4,-5,-6) is _____

2 The degree of isolated vertex is _____

3 Median is the value dividing the observations in two equal parts(True/False)

4 The chromatic number of graph K_{120} is = 120 (True/ False)

Q_3 Short Questions(Attempt 5 out of 7) [10]

1 Find x and y if, $x(2,11) + y(1,6) = (7,1)$

2 If u = (1, 4, 3, 9,-3), v = (-5, -2, 5, 6, 8), then evaluate ||u||, ||v|| and ||3u+2v||

3 Draw a picture of the following graphs ,and state whether or not it is simple.
(i) V={P1,P2,P3,P4,P5},E=[{P2,P4},{P2,P3},{P3,P5},{P5,P4}]
(ii)V={A,B,C,D},E=[{A,B},{A,D},{B,C},{B,D},{C,D}]

4 Draw a diagram of the graphs $K_{3,4}$

5 What do you mean by the chromatic number of the graph? Find the chromatic number of K_{25}

6 Write down various measures of central tendency.
Explain one of themwithexample.

7 Calculate Median, Mode for the following data:

X	10	30	50	70	90
f	14	23	27	21	15

Q-4 Long Questions (Attempt 4 out of 8) [16]

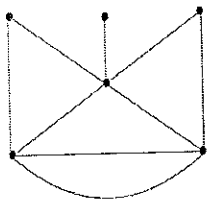
1 Find $A+B$, $A-2B$, $(2A+3B+I)$ and $(2A+B+3I)^T$ if,

$$A=\begin{pmatrix}1 & -2 & 3\\ 5 & -7 & 4\\ 7 & 1 & 2\end{pmatrix} \qquad B=\begin{pmatrix}4 & -5 & 2\\ 1 & 1 & 2\\ 3 & -4 & 0\end{pmatrix}$$

2 For matrices below,Show that $(AB)^T = B^T A^T$

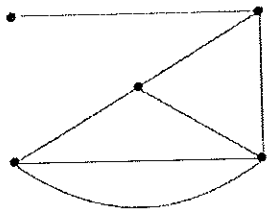
$$A=\begin{pmatrix}7 & 2 & 1\\ 2 & -4 & 3\\ 6 & -1 & 2\end{pmatrix} \qquad B=\begin{pmatrix}4 & 1 & 1\\ -2 & 4 & 5\\ 2 & 5 & 2\end{pmatrix}$$

3 For given graph,
(i)Describe graph formally
(ii)Find the degree of each vertex and parity of each vertex.
(iii) verify that "the sum of degrees of vertex of the graph is equal to number of edges"

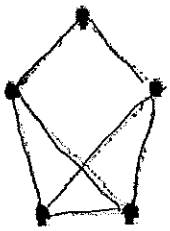


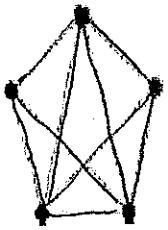
4 Find the number m of edges in the graphs: 1) K_{120} 2) K_{200} 3) K_{15} 4)K_{24}

5 Define: Planar graph. Show that given graphs are planar .Verify Euler's Formula for given graphs.



6 Find the chromatic index of the graph G,where G is:





7 Calculate Mean,Median, Mode for the following data:

X	10	30	50	70	90
f	14	23	27	21	15

8 Find the Median and Mode of the given data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No.ofStudents	2	5	8	16	9	5

—X—