SARDAR PATEL UNIVERSITY

BCA Sem-II EXAMINATION

THURSDAY, 28ᵗʰ MARCH, 2019

10.00 am to 12.00 noon

SUBJECT: MATHEMATICS (US02SBCA21)

Maximum Marks: 35

Q:1 Write the correct option in the answer book.   [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 graph G is……… if each vertex has the same degree.

   (a) disconnected   (b) regular   (c) connected   (d) complete

(3) The degree of pendant vertex is ……..

   (a) 1   (b) 0   (c) 2   (d) 1

(4) The mean of first 10 natural numbers is _____

   (a) 5   (b) 6.5   (c) 5.5   (d) 2

(5) In a connected map with V = 25, E = 60 then R = _____

   (a) 113   (b) 60   (c) 37   (d) 10

Q:2 Answer the following in short. (**Any five**)   [10]

(1) Find the number of edges in the graphs K_{10}.

(2) Draw a diagram for graph G=G(V,E), where V={A,B,C,D}, E=[{A,B},{D,A},{C,A},{C,D}].

(3) Find x and y if, $x(1, 1) + y(2, -1) = (1, 4)$

(4) If $A = \begin{bmatrix} 1 & 2 \\ 7 & -2 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 1 \\ 3 & -4 \end{bmatrix}$, then find AB and B A.

(5) Define Disconnected graph with example.

(6) Define planar graph. Is K_5 planar?

(7) Find Median of 7, 7, 8, 6, 5, 8, 3, 2, 2, 9, 7.

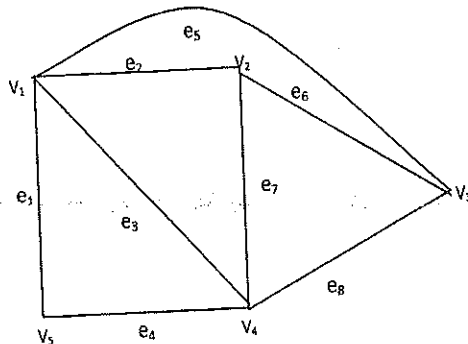(8) Find the Mean of first five prime numbers.

(P.T.O)

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Q:3 [05]

(a) Verify that the matrix $\frac{1}{3}\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ -2 & 2 & -1 \end{bmatrix}$ is orthogonal.

(b) Find the incidence matrix and adjacency matrix for the following Graph: [05]
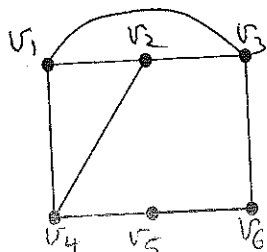

<p style="text-align:center">OR</p>

Q:3 [05]

(c) Find x, y, z and t if matrix $\begin{bmatrix} 0 & 2 & x \\ y & z & -3 \\ 7 & t & 0 \end{bmatrix}$ is Skew-symmetric.
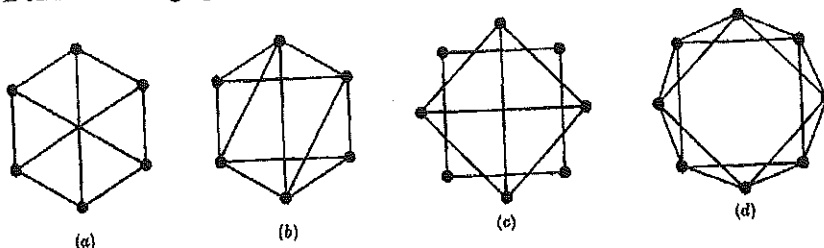
[05]

(d) Consider the graph G as

(i) Find all simple paths from v_1 to v_6.
(ii) Find all trails from v_1 to v_6.
(iii) Find d (v_1 , v_5).
(iv) Find all cycles in G.

Q:4

(a) Define: Planar graph. Checks which of the following are planar graphs. Justify. [05]

(a)　　　(b)　　　(c)　　　(d)

(b) Calculate AM, Median, Mode for the following data: [05]

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

Q:4   OR
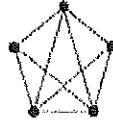
(c)   [05]

Define Chromatic number. Find the Chromatic number of the given graphs:

(d)   Find the median and mode of the given data: [05]

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

— X —

(3)

(3)