10/A5 SEAT No._____ No. of Printed Pages : 4 Sc

SARDAR PATEL UNIVERSITY

BCA Sem-II EXAMINATION (NC)

TUESDAY, 26th MARCH, 2019

10.00 am to 12.00 noon

SUBJECT: MATHEMATICS-II (US02FBCA02)

Maximum Marks: 70

Q:1 Choose the correct option in the following, mention the correct option with the answers in the answer book. [10]

(1) The degree of pendant vertex is

(a) one (b) two (c) zero (d) three

(2) The number of edges in the complete graph K_{10} is

(a) 50 (b) 55 (c) 45 (d) 10

(3) In a connected map with V = 5, R = 3 then E = ____

(a) 2 (b) 3 (c) 4 (d) 6

(4) A square of ..... is called Variance

(a) Range (b) Mean deviation (c) Standard deviation (d) Quartile deviation

(5) Three persons out of five persons can be arranged in a row in ..... ways

(a) 3 (b) 10 (c) 60 (d) 6

(6) A graph that can be drawn in a plane or on a sphere so that its edge do not cross is said to be _____

(a) planar (b) non planar (c) complete (d) simple

(7) $\binom{n}{n-7} =$ (a) $\binom{n}{n+7}$ (b) $\binom{n}{n}$ (c) $\binom{n}{7}$ (d) $\binom{n}{0}$

(8) The median of 1,2,3,.....50 is

(a) 25 (b) 26 (c) 26.5 (d) 24

(9) Which of the following is the superior measure of Dispersion

(a) Range (b) Standard deviation (c) Mean deviation (d) Quartile deviation

(10) An alternating sequence of vertices and edges in graph is called .....

(a) trail (b) cycle (c) path (d) degree

Q:2 Answer the following in short **(Attempt any Ten).** [20]

(1) Explain the positive correlation with two examples. (PTO)

(P.T.O)

(2) Mr. X buys two cows, three pigs and four hens from a man who has five cows, six pigs and eight hens. How many choices he have?

(3) A class contains 6 men and 4 women. Find the number n of ways to select a 3-member committee with at least 2 women.

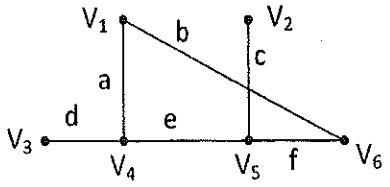
(4) What do you mean by the chromatic number of the graph? Find the chromatic number of K_{15}.

(5) Draw a connected map of a graph with 4 vertices and 5 regions.

(6) Find the number n of distinct permutations that can be formed from all the letters of each word SURJICAL.

(7) State Euler's formula with at least two examples which verifies it.

(8) Find cut-vertices and bridges of a graph :



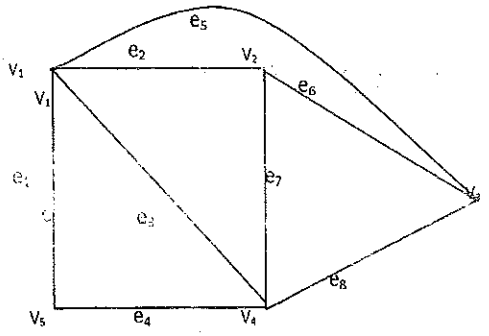
(9) Define complete graph. Is K_5 Complete?

(10) Draw 3-regular graph with 6-vertices.

(11) Find standard deviation of the observation 1, 2, 3, 4, 5, 6, 7, 8.

(12) Define region of a map and degree of a region by giving example of each.

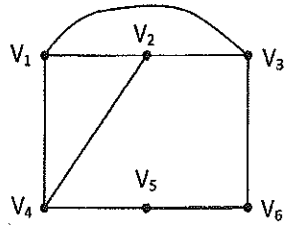
Q:3(a) Find the incidence matrix and adjacency matrix for the following Graphs: [5]



(b) Draw a multigraph whose adjancey matrix is A= $\begin{bmatrix} 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 2 \\ 1 & 1 & 0 & 2 & 0 \end{bmatrix}$ [5]

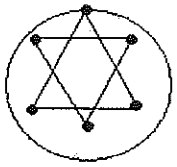
OR

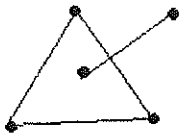
Q:3(c) Consider the graph G as [5]



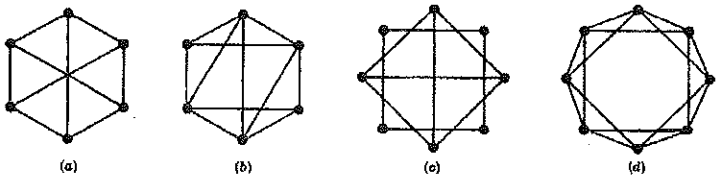
(i) Find all simple paths from v_1 to v_6.
(ii) Find all trails from v_1 to v_6.
(iii) Find $d(v_1, v_5)$.
(iv) Find all cycles in G.

(d) Define connected components. Find the connected components of the following graphs: [5]

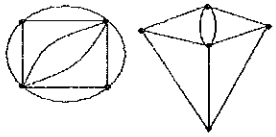




Q:4(a) Define: Planar graph. Checks which of the following are planar graphs. Justify. [5]



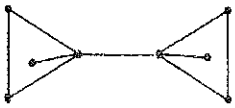
(b) Paint the following maps with minimum number of colors: [5]



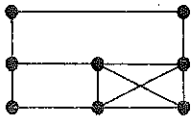
OR

Q:4(c) Describe Welch-Powell algorithm for painting a graph and give one example of it. [5]

(d) State Euler's formula for planar graph. Verify Euler's formula for the following graphs: [5]



(i)



(ii)

Q:5(a) Find the number of distinct permutation that can be formed from all the letters of the word CHOKIDAR. Also find the number of distinct permutation if the words are to begin with K. [5]

(b) Find the number m of ways that nine toys can be divided among four children if the youngest child is to receive three toys and each the others two toys. [5]

OR

Q:5(c) Suppose repetitions are not permitted. (a) Find the number of three-digit numbers that can be formed from the six digits 2, 3, 5, 6, 7, and 9. (b) How many of them are less than 400? (c) How many of them are even? [5]

(PTO)

(d) A debating team consists of 3 boys and 3 girls. Find the number of ways they can sit in a row where :(a) there are no restrictions; (b) the boys and girls are each to sit together; (c) just the girls are to sit together. [5]

Q:6(a) Find the standard deviation for the following frequency distribution and obtain the coefficient of variance. [5]

x:	6	7	8	9	10	11	12
f:	3	6	9	13	8	5	4

(b) Calculate Karl Pearson's coefficient of Skewness for the following data: [5]

Size	1	2	3	4	5	6	7
Frequency	10	18	30	25	12	3	2

OR

Q:6(c) Find quartile deviation for the following data [5]

Class	0-15	15-30	30-45	45-60	60-75	75-90	90-105
f	8	26	30	45	20	17	4

(d) Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y): [5]

X:	65	66	67	67	68	69	70	72
Y:	67	68	65	68	72	72	69	71