[45]

SARDAR PATEL UNIVERSITY, VALLABH VIDYANAGAR

SEAT No._____ **BCA SEMESTER-II (NC Batch)** No. of Printed Pages: 3

External Examination 2022

US02FBCA02-Mathematics

Date: -25-04-2022 **Time: - 12:00pm to 02:00pm** **Marks: -70**

Q.1 Multiple Choice Questions [10]

1. Edges connecting the same end points are called .....
   (a) trivial graph (b) multigraph (c) loops (d) multiple edges
2. A graph with one vertex and no edges is called ....
   (a) trivial graph (b) multigraph (c) null graph (d) multiple edges
3. A graph with no vertices and no edges is called ...
   (a) trivial graph (b) multigraph (c) null graph (d) multiple edges
4. 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) Complete graph (b) simple graph (c) planar graph (d) Non-planar graph
5. A map is a particular _____ representation of a finite planar multigraph.
   (a) planar (b) non planar (c) complete (d) simple
6. For connected map, the relation between number of vertices V, number of edges E and number of regions R is _____
   (a) R + E - V = 2 (B) V – E – R = 2 (C) E – R + V = 2 (d) V – E + R = 2
7. 0! + 1! = _____
   (a) 0 (b) 1 (c) 2 (d) None
8. P(7, 3) = _____
   (a) 21 (b) 12 (c) 120 (d) 210
9. The quartile Q2 is coincides with _____
   (a) Mean (b) Mode (c) Median (d) Standard deviation
10. Which of the following is a measure of Dispersion?
    (a) Mean (b) Mode (c) Median (d) Standard deviation

Q.2 State True /False and Fill in the Blanks [08]

1. A graph G is _____ if each vertex has the same degree.
2. A graph G is _____ if each vertex is connected to every other vertex.
3. Chromatic number is the _____ number of color required to paint graph G.
4. A spanning tree T of graph contains all the _____ of G
5. Four persons out of five persons can be arranged in a row in 120 ways. State True or False
6. If restaurant has 6 different desserts, then customer can choose: 2 of the desserts in 14 ways. State True or False
7. A square of range is called Variance. State True or False.
8. Mode is not the measure of Dispersion. State true or false.

(P.T.O.)

Q.3Write a short answer for given questions (10 out of 12) **[20]**

1. Draw a picture of given values

(a) G1 = (V1,E1), where V1 = {a, b, c, d, e} and E1 = {ab, bc, ac, ad, de}.

(b) G2 = (V2,E2), where V2 = {P,Q,R, S, T} and E2 = {PQ, PR, PS, PT, TR, PR}.

2. Define Regular Graph and Complete Graph.

3. Define Null Graph and trail graph.

4. Define Degenerate tree with example.

5. Define forest with example.

6. Write a Euler's formula and give one example.

7. Explain the fundamental principle of counting.

8. Find the number of distinct permutation that can be formed from all the letters of the word

(1) RADAR (2) UNUSUAL

9. Find the number of "three-letter words" using the six letters A, B, C, D, E and F without repetition.

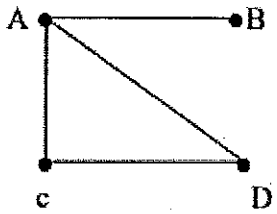
10. Explain the positive correlation with two examples.

11. Define the quartiles Q1 and Q3.

12. Define Standard deviation and Variance.

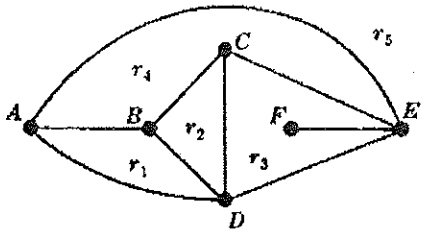
Q.4 Long Questions Answers (4 out of 8) **[32]**

1. Draw cut point graphs and Bridges graph from given graph.

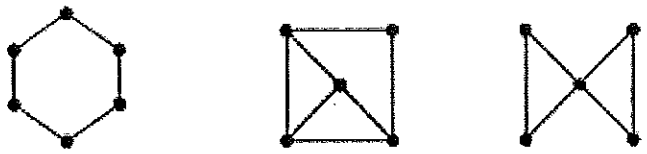


2. Find the number m from the edges in the graph. (1) K_{120} (2) K_{200} (3) K_{24} (4) K_{15}

3. Find the degree of region, closed path and cycle from given graph.



4. Find the number of spanning tree from given graph.



5. Find the number n of distinct permutations that can be formed from all the letters of each word SOCIOLOGICAL

6. Find n, if

(i) P (n , 2) = 72 (ii) P(n , 4) = 42 P(n , 2).

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

8. Find quartile deviation for the following data.

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