	The Bodwad Sarvajanik Co-Op. Education Society Ltd., Bodwad **Arts, Commerce and Science College Bodwad** **<u>Question Bank</u>** **Class:-TYBSc** **Sem:-VI** **Subject: Graph Theory** **Paper Name:- MTH 605**	
Sr. No.	**Questions**	**Ans**
1)	If ………. of G have the same end vertices then these edges of G are called as multiple edges or parallel edges. a) One edge b) Two or more edges c) Two edges d) All of these	**B**
2)	If end vertices of an edge are same, then it said to be ………. a) Loop b) Parallel edges c) Incident edges d) None of these	**A**
3)	A graph with parallel edges is called as ………. a) Multiple graph b) Loop c) Multigraph d) Both a and c	**D**
4)	A graph containing no edge is called as ………. a) Simple graph b) Complete graph c) Null graph d) Multiple graph	**C**
5)	A graph having finite number of vertices is called as ………. a) Null graph b) Infinite graph c) Complete graph d) Finite graph	**D**
6)	A graph without self-loops and parallel edges is called as ……… a) Simple graph b) Regular graph	**A**

	c) Multiple graph d) None of these	
7)	The number of vertices of graph G = (V, E) i.e. $\|V\|$ is called as …… a) Size of a graph G b) Order of a graph G c) Degree of a graph G d) None of these	**B**
8)	By Hand Shaking Lemma, if G = (V, E) be a graph, then sum of the degrees of all vertices of G is equal to twice the number of ………of G. a) Edges b) Vertices c) Sub graph d) None of these	**A**
9)	A subgraph of a graph G is said to be spanning subgraph of G if it contains ……… the vertices of G. a) One b) More than one c) All d) None of these	**C**
10)	A graph G is said to be a ………. if all the vertices of graph G have same degree. a) Complete graph b) Regular graph c) Bipartite graph d) None of these	**B**
11)	If a vertex set V can be partitioned into two nonempty disjoint subsets V_1 and V_2 such that every vertex in V_1 is adjacent to all vertices in V_2, then graph is called ………. a) Bipartite graph b) Regular graph c) Simple graph d) Complete bipartite graph	**D**
12)	Total number of edges in a complete bipartite graph $K_{4,5}$ is ……… a) 20 b) 34 c) 25 d) 49	**A**
13)	$\bar{\bar{G}} =$ ……….	

	a) N_n b) $\bar{G}$ c) G d) None of these	**C**

14)	A walk is said to be trail if no …… is repeated in it. a) Edge b) Vertex c) Point d) None of these	**A**
15)	The total number of times the edges occur in a walk is called as ………. of the walk. a) Weight b) Length c) Distance d) None of these	**B**
16)	A graph G = (V, E) is called as ………. graph if for every u, v ∈ V there exists at least one u-v path in G. a) Connected b) Disconnected c) Component d) None of these	**A**
17)	A maximal connected subgraph of a graph G is called ………. of the graph G. a) Root b) Component c) Centre d) None of these	**B**
18)	The maximum distance between two vertices of a graph is called ………… of a graph. a) Diameter b) Length c) Distance d) None of these	**A**
19)	A connected graph G containing at least one Eulerian circuit in it, is called as ………. graph.	

	a) Eulerian b) Hamiltonian c) Kuratowski's d) None of these	**A**

20)	A graph G is said to be .... graph if G has at least one Hamiltonian circuit. a) Eulerian b) Hamiltonian c) Kuratowski's d) None of these	**B**
21)	A complete graph K_n for .... is Eulerian if and only if n is odd. a) $n \geq 1$ b) $n > 1$ c) $n < 1$ d) None of these	**B**
22)	K_n is Hamiltonian graph but not Eulerian if .... is even. a) $n > 3$ b) $n > 2$ c) $n > 1$ d) None of these	**A**
23)	A complete bipartite graph $K_{m,n}$ is Hamiltonian if and only if .... a) $m < n$ b) $m > n$ c) $m = n$ d) None of these	**C**
24)	The number of vertices in G is .... if and only if bipartite graph G is Hamiltonian. a) Odd b) Even c) Both a and b d) None of these	**B**
25)	A connected graph without circuit is called as .... a) Tree b) Path c) Forest d) None of these	**A**

26)	A collection of ………. trees is called as a forest. a) Joint b) Connected c) Disjoint d) None of these	**C**

27)	A tree with one vertex is called as a ………. tree. a) Trivial b) Non-trivial c) Rooted d) None of these	**A**
28)	A complete graph K_n is a tree if and only if ………. a) n = 1 b) n = 2 c) n = 1 and n = 2 d) n = 1 or n = 2	**D**
29)	The path between every pair of vertices of a tree is ………. a) Two b) Unique c) More than two d) None of these	**B**
30)	A connected graph with n vertices , ……….. edges is a tree. a) n – 3 b) n - 2 c) n - 1 d) None of these	**C**
31)	A vertex in a graph G with minimum eccentricity is called ………. a) Radius of a graph G b) Centre of a graph G c) Diameter of a graph G d) None of these	**B**
32)	A maximum eccentricity of a vertex of a graph is called a	

	……….of graph G. a) Diameter b) Radius c) Diagonal d) None of these	**A**

33)	A tree in which one vertex is distinguished from all others is called a ………. tree. a) Trivial b) Binary c) Rooted d) None of these	**C**
34)	If a tree contain exactly one vertex of degree two and all other vertices have degree either one or three then the graph is called ………. tree. a) Spanning b) Binary c) Trivial d) None of these	**B**
35)	In a binary trees with n vertices has ………. pendent vertices. a) n – 1 b) n c) $\frac{(n+1)}{2}$ d) None of these	**C**
36)	A subgraph T of a connected graph G is said to be spanning tree of graph G if T is tree and ………. a) V(G) = V(T) b) E(G) = E(T) c) V(G) = E(T) d) None of these	**A**
37)	Let T be a spanning tree of a connected graph G of n vertices, then number of edges (n-1) in the tree T is called ………. of G. a) Degree b) Rank c) Nullity d) None of these	**B**

38)	Let T be a spanning tree of a connected graph G of n vertices and q edges, then nullity of G is ………. a) q b) q - 1 c) q + 1 d) q - n + 1	**D**

39)	A minimal disconnecting set of graph G is called ………. of G. a) Cut set b) Fundamental cut set c) Path d) Walk	**A**
40)	Which of the following is true? a) $\delta(G) < \lambda(G) < K(G)$ b) $K(G) < \delta(G) < \lambda(G)$ c) $\lambda(G) < K(G) < \delta(G)$ d) $K(G) < \lambda(G) < \delta(G)$	**D**
41)	Let T be a spanning tree of a connected graph G, then a cut-set which contain exactly one branch of T is called ………….. with respect to T. a) Fundamental cut-set b) Fundamental cycle c) Both a and b d) None of these	**A**
42)	Let T be a spanning tree of a connected graph G, then cycle formed by adding one chord to T is called ………. with respect to T. a) Fundamental cut-set b) Fundamental cycle c) Both a and b d) None of these	**B**
43)	A graph which can be drawn on a plane without intersecting of edges is called ………. graph. a) Planar b) Plane c) Connected d) None of these	**A**

44)	A representation of a planar graph in which no two edges intersects is called ……….. graph or embedding. a) Planar b) Plane c) Connected d) None of these	**B**

45)	In a plane graph regions bounded by cycles are called …………. or regions or windows. a) Faces b) Paths c) Circuits d) None of these	**A**
46)	By Euler's formula for planar graph, if G is a connected plane graph with p vertices, q edges and r faces then ………. a) p – r + q = 2 b) q – p + r = 2 c) p – q + r = 2 d) r – p + q = 2	**C**
47)	The number of edges in a planar graph with 16 vertices and 20 faces. a) 2 b) 20 c) 16 d) 34	**D**
48)	If Geometrical dual of G is G then G is called as …………. graph. a) Planar b) Self dual c) Geometrical Dual d) None of these	**B**
49)	Geometrical dual of K_4 is ………. a) K_1 b) N_4 c) K_4 d) K_5	**C**
50)	The minimum number of colours required to colour a graph G is	

	called the ……….. a) Chromatic number b) Dual c) Colouring d) None of these	**A**

51)	In the incidence matrix m × n matrix A such that pair of elements is ………. a) Vertex-Vertex b) Edge-Edge c) Vertex-Edge d) None of these	**C**
52)	The adjacency matrix is ……….. a) Symmetric b) Asymmetric c) Both a and b d) None of these	**A**
53)	A simple diagraph in which there is exactly one edge directed from every vertex to every other vertex, is called as ………. diagraph. a) Simple b) Complete c) Regular d) Balanced	**B**
54)	A diagraph D is said to be balanced if for every vertex v, the indegree of v is equal to out degree of v that is ………. a) $d^{+}(v) < d^{-}(v)$ b) $d^{+}(v) > d^{-}(v)$ c) $d^{+}(v) = d^{-}(v)$ d) None of these	**C**
55)	A balanced diagraph is said to be regular graph if every vertex has the ……….. indegree and outdegree as every other vertex. a) One b) Different c) More than one d) Same	**D**

56)	The incidence matrix of a directed graph is a $n \times m$ matrix B where n and m are the number of vertices and edges respectively, such that $B_{ij} =$ ….. if the edge e_j leaves vertex v_i, ….. if it enter vertex v_i and otherwise ….. a) -1, 0, 1 b) 0, -1, 1 c) 1, 0, -1 d) -1, 1, 0	**D**