18MAB302T – Discrete Mathematics
Unit – V: Graph Theory

OBJECTIVE TYPE QUESTIONS

1. A vertex which is not adjacent to every other vertex is called _____ vertex

(a) Isolated   (b) Pendant   (c) Incident   (d) Simple

2. A graph in which loops and parallel edges are allowed is called _____ graph

(a) Pseudo   (b) Multi   (c) Simple   (d) Null

3. The degree of each vertex in K_n is

(a) n-1   (b) n   (c) n-2   (d) 2n-1

4. A vertex with zero in degree is called _____

(a) Sink   (b) Source   (c) Terminal   (d) Out degree

5. The number of edges in a complete graph with 'n' vertices is _____

(a) $\dfrac{n(n-1)}{2}$ (b) $\dfrac{n(n+1)}{2}$ (c) $\dfrac{n!}{2}$ (d) $\dfrac{n(n+1)(2n+1)}{2}$

6. A matrix whose rows are the rows of unit matrix but not necessarily in the vertical order is called

(a) Square matrix   (b) Combination   (c) Permutation   (d) Binary

7. A _____ is a finite alternating sequence of vertices and edges beginning and ending with the vertices such that each edge is incident on the vertices preceding and following it

(a) Simple path   (b) Cycle   (c) Simple cycle   (d) Path

8. If the initial and final vertices of a path are same, then it is called _____

(a) walk   (b) Path   (c) Circle   (d) Closed circle

9. A circuit of a graph G is called _____ circuit if it includes each edge of G exactly once

(a) Hamiltonian   (b) Konisberg   (c) Closed   (d) Eulerian

10. A path of a graph G is called a _____ path if it includes each vertex of G exactly once

(a) Hamiltonian   (b) Konisberg   (c) Eulerian   (d) Open

11. A connected graph without any circuit is called _____

(a) Leaf   (b) Flower   (c) Tree   (d) Loop

12. A tree with 'n' vertices has _____ edges

(a) nC_2 (b) nP_2 (c) n - 1   (d) n!

13. Any _____ graph with n vertices and n – 1 edges is a tree

(a) Hamiltonian   (b) Circuitless   (c) Eulerian   (d) Closed

14. Every vertex which is reachable from a vertex v through a single edge are called _____ of v.

(a) descendant   (b) leaf   (c) children   (d) root

15. Every vertex which is reachable from a vertex 'v' is called

(a) descendant   (b) leaf   (c) children   (d) root

16. If every internal vertex of a rooted tree has exactly 2 children ,then the tree is called _____

(a) Full binary   (b) Binary tree   (c) Tree   (d) Circuit

17. The number of vertices of a full binary tree is 13, then the number of pendant vertices is ____

(a) 7   (b) 6   (c) 5   (d) 0

18. A minimum height of a 11 vertex binary tree is __

(a) 4   (b) 5   (c) 3   (d) 11

19. A given connected graph G is a Euler graph iff all vertices of G are of

 (a) same degree   (b) even degree   (c) Odd degree   (d) different degrees

20. A maximum height of a 11 vertex binary tree is __

(a) 4   (b) 5   (c) 3   (d) 6

21. If a vertex v of a tree has no children it is called

(a) Pendant vertex   (b) Non-terminal vertex   (c) Descendant   (d) Root

22. The graph G with no parallel and no loops is _____ graph

(a) Multi graph   (b) Pseudo   (c) Simple   (d) Tree

23. In a directed graph the number of edges with v as terminal vertex is called _____ of v

(a) Source   (b) Sink   (c) In degree   (d) Out degree

24. _____ graphs satisfy invariant property

(a) Homomorphic   (b) Isomorphic   (c) Hamiltonian   (d) Eulerian

25. If a Graph with all vertices are of same degree then it is called as _____ graph

(a) Bipartite   (b) Completely bipartite   (c) Proper subgraph   (d) Regular

26. Number of vertices of ODD degree in a undirected graph is
 (a) even   (b) Odd   (c) zero   (d) one

27. A graph that has neither self loops nor parallel edges is called as

 (a) Pseudo   (b) Multi   (c) Simple   (d) Null

28.The sum of the degrees of all the vertices of an undirected graph is

 (a) 2e   (b) e   (c) zero   (d) 1

29. How many edges are there in a graph with 10 vertices each of degree 6 is

  (a) 40   (b) 50   (c) 30   (d) 60

30. Which one of the following degree sequence forms a graph

(a) 4,4,4,3,2   (b) 1,1,1,1,1   (c) 1,1,1,1,3   (d) 2,2,2,2,2

31.The maximum no of edges in a simple graph with 7 vertices is

(a) 10   (b) 20   (c) 21   (d) 25

32. A simple graph with n vertices must be connected if it has more than …… edges

(a) $\dfrac{(n-1)(n-2)}{2}$ (b) $\dfrac{n(n+1)}{2}$ (c) $\dfrac{n!}{2}$ (d) $\dfrac{n(n+1)(2n+1)}{2}$

33. A simple graph G with n vertices has a Hamiltonian cycle if the degree of every vertex in G is atleast

(a) n   (b) n/2   (c) n-1   (d) n+1

34. Let G be a tree with n vertices ,then G-e is having ……edges

(a) n-1   (b) n/2   (c) n-2   (d) n+1

35. A tree has

(a) only one centre   (b) only Two centres   (c) three centres

(d) either one or two centres

36. A graph with only one vertex and no edges is called as

(a) Trivial   (b) isolated   (c) pendant   (d) loop

Answers

1. (a)	11. (c)	21.(a)	31.(c)
2. (a)	12. (c)	22.(c)	32.(a)
3. (a)	13. (b)	23.(b)	33.(b)
4. (c)	14. (c)	24.(c)	34.(c)
5. (a)	15. (a)	25.(d)	35.(d)
6. (b)	16. (a)	26.(a)	36.(a)
7. (a)	17. (a)	27.(c)	
8. (c)	18. (c)	28.(a)	
9. (d)	19. (b)	29.(c)	
10.(a)	20. (b)	30.(d)	