MATH 3032  GRAPH THEORY – TERMINOLOGY AND NOTATION

LIST 3

23) EDGE SEQUENCE — An edge sequence in $G$ is a finite sequence of edges of the form $v_0v_1, v_1v_2, v_2v_3, \ldots, v_{m-1}v_m$. $v_0$ and $v_m$ are the initial and final vertices of the edge sequence from $v_0$ to $v_m$ (or connected between $v_0$ and $v_m$).

24) LENGTH — The length $m$ of the edge sequence is the number of edges in the edge sequence.

25) CHAIN — If all the edges of the edge sequence are distinct, it is called a chain.

26) PATH — If all the vertices of the edge sequence are distinct, it is called a path.

27) CLOSED, CIRCUIT — The edge sequence, chain or path is closed if $v_0 = v_m$.
A closed path (with at least one edge) is called a circuit.

28) CONNECTED, DISCONNECTED — $G$ is connected if given any pair of vertices $v, w$ of $G$, there is a path from $v$ to $w$. Otherwise $G$ is disconnected.

29) COMPONENT, $c(G)$ — $G_1$ is a component of $G$ if it is a maximal connected subgraph (i.e., a connected subgraph contained in no larger connected subgraph). We write $c(G)$ for the number of distinct components of $G$.

30) $k$-CIRCUIT, EVEN CIRCUIT, ODD CIRCUIT — $C$ is a $k$-circuit if it is a circuit of length $k$. $C$ is an even (odd) circuit if it is a $k$-circuit with $k$ even (odd).

31) DISTANCE — If $G$ is connected, the distance $d(u, v)$ between 2 vertices $u$ and $v$ of $G$ is the length of a shortest path connected between $u$ and $v$.

32) EULER CHAIN, TOUR, EULER TOUR — An Euler chain of $G$ is a chain which traverses each edge of $G$ exactly once.
A tour of $G$ is a closed edge sequence which traverses each edge of $G$ at least once.
An Euler tour is a tour which traverses each edge of $G$ exactly once.

33) EULERIAN GRAPH — $G$ (connected) is an Eulerian graph if it contains an Euler tour.

34) SEMI-EULERIAN GRAPH — $G$ (connected) is semi-Eulerian if it contains an Euler chain.

35) HAMILTON PATH, HAMILTON CIRCUIT — A Hamilton path in $G$ is a path which contains every vertex of $G$. A Hamilton circuit for $G$ is a circuit of $G$ containing every vertex of $G$.

36) HAMILTONIAN GRAPH, SEMI-HAMILTONIAN — $G$ is Hamiltonian or semi-Hamiltonian if $G$ contains a Hamilton circuit, or Hamilton path, respectively.

37) CLOSURE of $G$ — The closure $\overline{G}$ of $G$ is obtained by successively joining pairs of non-adjacent vertices of $G$ whose degree sum is at least $\nu(G)$ until there are no such pairs left.