

# FORM 4

## **NETWORK IN GRAPH THEORY**

#### Graphs

A graph is a series of nodes (or vertices) either connected or not connected between one another by links (or edges).

## Degree of a Vertex

The degree of a vertex is the number of edges which links each vertex with other vertices such that the degree of a loop is two. The degree of a multiple edges case is the same as the number of edges involved between two edges.

## Simple Graphs

A simple graph is an undirected graph such that it does not have any loop or multiple edges.

### **Directed Graphs**

A directed graph is a graph such that each of its edges has direction orientation.

### Weighted Graphs

A weighted graph is a graph such that a number is allocated to each of its edges. Such weightages represent cost, distance, time or capacity.

#### Subgraphs

If a graph F is part of a graph G, then the graph F is the subgraph of graph G. It is denoted by  $F \subseteq G$ .

#### **Trees**

A tree is a non-directed graph such that any two vertices are represented exactly by one edge. A tree does not have cycles.

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#### **Networks**

A network is a graph which has at least a pair of connected nodes.

## Representing Information in Networks of

- Food chain
- Electricity circuit
- Computer network
- Internet network
- MRT and LRT networks in the Klang Valley
- Applications of trees in Social Science
- North-South Highway, East-West Highway, East Coast Highway and Pan Borneo Highway networks

### Solving Problems Involving Networks

Determining the mean of transport which is the most optimum in terms of time, distance and expenses.

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