# Edexcel GCE

# Applied Information and Communication Technology

## Unit 9: Communications and Networks

May 2013
**Scenario**

Paper Reference
**6959/01**

The scenario should be distributed to candidates at least three working weeks before the examination.
Note: There are **no** practice files for this examination.

This scenario should be used for the purposes of preparing candidates for the examination. This copy **must not** be taken into the examination. The information contained in the scenario will be included in the examination paper.

Further details are in the Instructions for the Conduct of Examinations (ICE), available from the Edexcel website for this qualification.

**Edexcel will not accept any request for special consideration should candidates be given the incorrect scenario for the examination they are sitting.**

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**Scenario**

## Varma Loko Railway

The government of the tropical island of Varma Loko is trying to develop the island's tourist industry. Resorts on the coast are attracting a large number of tourists but those in the interior are struggling. The government commissioned research to find out why the interior is not doing as well. They have concluded that the prime cause of the problem is poor transportation links.

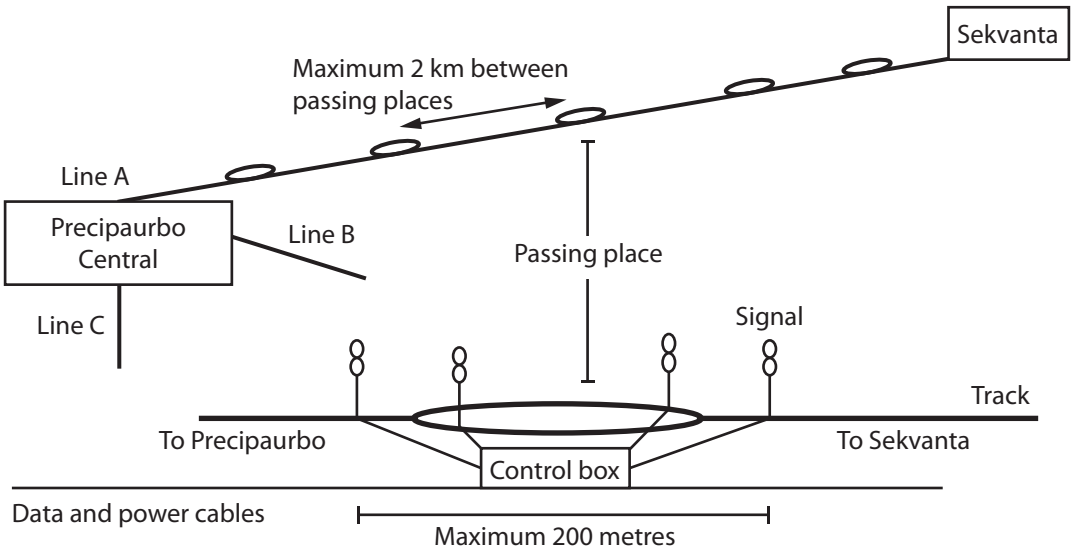
Away from the coast much of Varma Loko is mountainous and the roads are narrow and winding. There is an ongoing road improvement scheme but this will take many years to complete.

The capital city, Precipaurbo, has three rail links. Line A leads to several towns in the interior. These towns have the potential to become tourist centres. Line B goes to the airport and Line C connects the coastal resorts. The railway is single track for most of its length. This severely restricts the number of trains that can be run. The Transport Minister has decided that it will be quicker to improve the railway than to wait for the new roads to be completed.

There are a number of stations on the railway. The maximum distance from one station to the next is 20 km. Making the entire railway double track would be difficult. Instead, passing places will be created, controlled by a signal system. The passing places will be a maximum of 2 km apart.

The railway is naturally divided into sections by the stations along its length. Each section will have the same basic design and will be controlled by a station. For example, the first section on Line A is controlled by Precipaurbo Central station. The next section is controlled by the first station along the line, Sekvanta, and so on.

The basic section design is illustrated in the diagram, which shows the track between Precipaurbo Central and Sekvanta. There are 50 stations on the entire railway.



The project manager, Viro De Ordoni, has hired you to advise on IT matters. The project has a multi-million-pound budget and Viro has indicated that money and manpower will not be a problem.

You will be dealing with the installation of an IT system at Precipaurbo Central. The IT system will:

- monitor and control the first section of track on each of the three lines
- provide a centralised web-based booking system for the entire railway
- provide administrative and booking/ticket office facilities at Precipaurbo Central
- support a bookings database for the entire railway that can be accessed from any station when people book tickets.

Varma Loko Railway will need a Wide Area Network (WAN) to connect the stations and passing places. Each station already has a small Local Area Network (LAN) with an internet connection.

The WAN must be able to handle:

- control signals to and from the control boxes
- telephone messages between stations
- data for the bookings database.

Due to the mountainous terrain, it is essential that all communication links follow the railway track, as this will allow easier installation and maintenance.

The WAN must be:

- self-contained, with permanent communication links
- secure
- robust and reliable.