



# Optical Networks Design test topics

This certification test contains 35 questions and grants successful candidates with certificate from optical networks design domain.

Percentages of questions from any of the category of the topics will be evaluated and decided for any of the certification test from the Centrium Tech LTD, and can vary from one to another weekly test.

Below are presented topics that are point of interest for all candidates that want to be successful on this certification test.

## 1. Optical Networks Components

1.1 Understanding different types of networks components in different architectures of optical networks

1.1.1 Passive optical components

1.1.2 Active optical components

1.2 Answering what is the role of the specific network component in the network architecture

## 2. Optical Transmission Medium

2.1 Understanding different types of optical transmission medium

2.1.1 Multimode fiber

2.1.2 Singlemode fiber

2.1.3 Structures of optical fiber

2.1.4 Advanced types of optical fibers

2.1.5 Air (FSOCS)

2.2 Basic structural design of optical transmission medium

2.3 Pros and cons of optical transmission medium types

2.4 Which type of optical transmission medium in which optical network design is applicable and why





2.5 Evaluation of optical transmission medium characteristics before and its testing after implementation of the design

2.5.1 Standardised and ITU-T required optical transmission medium characteristics

2.5.2 Testing and measurements of transmission medium characteristics

2.6 Physical connection of optical medium (splicing, connecting)

### 3. Infrastructures For Optical Transmission Medium

3.1 Underground infrastructure, components, installation, testing, measurement and maintenance

3.1.1 HDPE pipes, micro-cabling

3.1.2 Digging, chambers, distances between and design scenarios

3.1.3 Techniques for laying and connecting optical cables

3.2 Aerial infrastructure and components

3.2.1 Techniques for installation and connecting optical cables

### 4. Data Transmission Theory Over Optical Medium

4.1 Analogue data transmission

4.2 Digital data transmission

### 5. Optical Transmission Types

5.1 Transmission over one wavelength optical channel

5.2 Multiplexing techniques (WDM, OTDM, SDM, etc)

### 6. Basic Optical Architectural Approaches

6.1 PtP

6.2 PtMP

### 7. Optical Networks Architectures

7.1 Optical LANs

7.2 Optical metro networks





7.2.1 PtP optical links

7.2.2 Access networks

7.2.3 Public optical networks

7.2.4 4G, 5G mobile networks optical links

7.3 Optical LH and ULH networks

7.4 Optical air transmission links and networks (FSOCS)

## 8. Evaluation of network capability

8.1 Reliability

8.2 latency

8.3 Capacity

8.4 SLA

8.5 Penetration to end-customers

8.6 Offered services

8.7 Network health, operation and maintenance

## 9. Non-ionising Optical Radiation

9.1 Biological effects from non-ionising optical radiation

9.2 Evaluation of non-ionising optical radiation

9.3 Measurement of non-ionising optical radiation

9.4 Classification of optical sources

9.5 Safety measures and protection against non-ionising optical radiation

