Practice Exam Questions for: Nokia Fundamentals of Optical Network Design (exam number: 4A0-250)

The following questions will test your knowledge and prepare you for the Nokia Fundamentals of Optical Network Design exam. Compare your responses with the Answer Key at the end of the document.

1. Which of the following is the best definition of converged networks?
   a. Converged networks have a layered service-specific architecture.
   b. Converged networks have a single layer that supports different services using IP/MPLS.
   c. Converged networks have a multi-service data layer on top of an optical transport layer.
   d. Converged networks have a single layer that supports optical transport.

2. Which of the following is NOT an advantage of WDM?
   a. WDM is independent from the protocol used.
   b. WDM can be applied to optical signals with different modulation formats.
   c. WDM allows maximal use of fiber capacity.
   d. WDM provides robustness against physical impairments and span losses.

3. Which of the following is NOT a reason for network planning?
   a. Optimizing the network design
   b. Ensuring reliability requirements
   c. Triggering alarms in case of failures
   d. Achieving the requested quality of service

4. Which of the following is a linear impairment?
   a. Crosstalk
   b. Fiber attenuation
   c. Polarization division multiplexing
   d. Self-phase modulation
5. Which of the following is NOT a standard type of equipment used in an optical network?
   a. Dispersion Compensation Module (DCM)
   b. Optical Channel Transport Unit - k (OTUk)
   c. Tunable Optical Add-Drop Multiplexer (TOADM)
   d. Reconfigurable Optical Add-Drop Multiplexer (ROADM)

6. Which of the following is NOT a suitable solution for overcoming linear impairment effects?
   a. Amplifier
   b. Power splitter/combiner
   c. Optimized (low loss) fiber
   d. Dispersion compensation module (DCM)

7. Which of the following is the best explanation of why the planning process is continuous?
   a. The planning process consists of numerous steps and takes a long time to be completed.
   b. The planning process requires constant monitoring of and adaptation to changes in network hardware and requirements.
   c. During the commissioning phase, the network management system modifies the commissioning parameters, thus a network re-planning is required.
   d. The amplifiers require reconfiguration periodically, which is a lengthy manual process.

8. Which one of the following is NOT an input for the network design steps?
   a. Traffic matrix
   b. List of network sites
   c. Commissioning report
   d. Table of fiber parameters

9. Consider a service supported by a trail. The trail’s availability is A. If a protection trail (link-disjoint) is added to support the service, how does the availability of the service change?
   a. The availability increases.
   b. The availability decreases.
   c. The availability does not change.
   d. It depends on the availability of the protection trail.

10. Consider two NEs with the same availability, A. Which of the following statements is correct, for the availability of a service using both NEs?
    a. If the NEs are placed in series, the service availability is equal to A.
    b. If the NEs are placed in series, the service availability is lower than A.
    c. If the NEs are placed in parallel, the service availability is lower than A.
    d. If the NEs are placed in parallel, the service availability is equal to A.

11. In which of the following steps of the design process the 1830 Engineering and Planning Tool (EPT) is NOT beneficial?
    a. Defining the topology.
    b. Analyzing the traffic demands.
    c. Defining the network elements.
    d. Computing the network availability.

12. Which of the following is NOT a main step in the EPT design workflow?
    a. Create
    b. Validate
    c. Automate
    d. Design
13. Why is it important to model the parameters of buried fibers in EPT accurately?
   a. If the parameters are not modeled accurately, incorrect fibers will be installed and the network will not become operational.
   b. If the parameters are not modeled accurately, the installation report cannot be generated and the equipment cannot be installed.
   c. If the parameters are not modeled accurately, EPT cannot compute a “complete, valid” design and the equipment cannot be installed.
   d. If the parameters are not modeled accurately, the commissioning might fail and the network will not become operational.

14. Consider the following exhibit, which shows the EPT Schematic View of a ROADM node. Which of the following optimizations can be put in place without affecting the design?

   a. The two output amplifiers can be removed.
   b. The two SFDs at the bottom can be removed.
   c. After connecting all the OT cards to a single SFD, the three unused SFDs can be removed.
   d. After connecting all the OT cards to the SFDs on the left side, the WR on the right side can be removed.
15. Consider the following exhibit, which shows a network and the channel utilization report. All demands have the same bit rate. Which is the link with the highest load?

![Network diagram]

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<tr>
<th>Link</th>
<th>9455</th>
<th>9450</th>
<th>9445</th>
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a. Link: Site1 – Site2
b. Link: Site2 – Site3
c. Links 9430, 9420 and 9410 have the same load.
d. It cannot be determined because the demand routing is not given.

16. Which of the following is NOT a justification for the requirement of shelf size minimization?
   a. Rental space constraint
   b. Maximum power constraint
   c. Line isolation
   d. Cost considerations

17. Which EPT report can be used for the deployment of the NEs?
   a. Installation
   b. Physical layer
   c. Channel utilization
   d. Design status details

18. Which EPT report can be used for cost calculations of all the network equipment?
   a. Installation
   b. Card inventory
   c. Bill of materials
   d. Power commissioning
19. Which EPT report can be used to configure the settings of one or more amplifiers?
   a. Installation
   b. Physical layer
   c. Channel utilization
   d. Power commissioning

20. Which of the following statements best describes CWDM?
   a. A technique used to carry multiple SONET/SDH signals on the same wavelength centered at 1300 nm.
   b. A technique used to carry multiple SONET/SDH signals on the same wavelength centered at 1550 nm.
   c. A technique used to carry multiple optical signals on wavelengths separated by 50 GHz.
   d. A technique used to carry multiple optical signals on wavelengths separated by 20 nm.
**Answer Key**

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