Practice Exam Questions for: Nokia Advanced Optical Network Design (exam number: 4A0-255)

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

1. Which of the following is an advantage of grooming?
   a. Reducing the number of wavelengths
   b. Reducing the noise
   c. Increasing the optical reach
   d. Increasing the availability

2. Consider the exhibit, which shows a network topology with the related link costs. Which of the following is the minimum spanning tree found by the Kruskal algorithm?
3. Which of the following best defines the term “coherent receiver”?
   a. The coherent receiver has a local oscillator for detecting the “absolute” phase of the received signal.
   b. The coherent receiver has two photoreceivers for detecting the “differential” phase of the received signal.
   c. The coherent receiver has an integrated WDM demultiplexer for coherent detection of the different wavelengths.
   d. The coherent receiver has a local interleaver for detecting the “differential” phase of the different wavelengths.

4. Which of the following statements about the use of guardband between coherent channels is TRUE?
   a. Guardband is not mandatory between coherent channels at any rate.
   b. Guardband is mandatory between coherent channels at 100G and higher.
   c. Guardband is mandatory between coherent channels at 200G and higher.
   d. Guardband is mandatory between coherent channels at any rate.

5. Is it possible to allocate a 50GHz channel on flex-grid?
   a. Yes; it will occupy 5 frequency slices.
   b. Yes; it will occupy 4 frequency slices.
   c. Yes; it will occupy 1/2 of a frequency slice.
   d. No; a 50 GHz channel can only be configured on a fixed grid.

6. What is the main limitation of using the received power to assess the quality of transmission (QoT) of an optical channel?
   a. It can only be used for non-coherent optical channels.
   b. It can only be used for transponders with high sensitivity.
   c. The impact of fiber attenuation is not taken into account.
   d. The impact of noise and distortion, as well as other issues not connected with the amount of optical power, is not taken into account.

7. Which of the following best describes the OSNR in a cascade of two EDFAs?
   a. It is lower than the OSNR of each EDFA.
   b. It is the same as the OSNR of each EDFA, if both EDFAs are identical.
   c. It depends on the bit rate.
   d. It depends on the type of modulation.

8. Which of the following is an effective solution to ensure QoT for an OSNR-limited trail?
   a. Using a FEC with higher coding rate.
   b. Replacing an EDFA with a Raman amplifier.
   c. Inserting an additional EDFA amplifier.
   d. Increasing the transmission rate.

9. What does an EPT commissioning file contain?
   a. The electrical power settings required for each rack
   b. The number of commissioned power-amplifiers on each rack
   c. The OSNR settings required for the amplifiers on each link
   d. The power settings required for the amplifiers on each link

10. Which of the following statements best describes an OTU frame?
    a. An OTU frame does not contain FEC.
    b. An OTU frame contains only the OTU payload.
    c. An OTU frame does not contain frame alignment bits.
    d. An OTU frame contains the OTU, ODU and OPU headers.
11. Which of the following statements best describes GMPLS?
   a. GMPLS is a control plane.
   b. GMPLS is a management plane.
   c. GMPLS is a software-defined network (SDN) controller.
   d. GMPLS is a network function virtualization (NFV) controller.

12. How is PRC implemented?
   a. PRC is implemented using GR and SBR.
   b. PRC is implemented using O-SNCP and SBR.
   c. PRC is implemented using O-SNCP and line protection.
   d. PRC is implemented using two protection paths in O-SNCP.

13. Consider the following exhibit. Which node architecture is shown?
   a. TOADM
   b. FOADM
   c. CDC-F ROADM
   d. Classic ROADM

14. Suppose a Fiber Channel (FC) link has a maximum length L for C credits. What happens if the number of credits is doubled (i.e., 2C) while the FC link length stays equal to L?
   a. The propagation latency is halved.
   b. The propagation latency doubles.
   c. The throughput doubles.
   d. The throughput stays the same.
15. Consider the following exhibit, which shows a network topology with fiber lengths in km. Low latency is required for a 40G service between A and D. Which is the best solution for this requirement?

a. Routing along A-C-D
b. Routing A-B-C-D
c. Using PTP protocol at A and D
d. Using non-coherent transmission

16. Which of the following is NOT a functional area as defined by the Telecommunication Management Network (TMN)?
   a. Configuration Management
   b. Encryption Management
   c. Fault Management
   d. Security Management

17. Which of the following is NOT an advantage of L1 encryption, compared to upper-layer encryption?
   a. Lower latency
   b. Lower overhead
   c. Inherent synchronization capability
   d. Transparency to upper layer protocols

18. Which of the following best describes DCI?
   a. Intra-data center network
   b. Inter-data center network
   c. Data channel interconnectivity
   d. Data communication interconnectivity

19. Consider the following exhibit, which represents an optical network with four ROADM nodes. Three services are requested: A-B unprotected, C-D unprotected, A-D protected (1+1 path protection). Which is the best solution for minimizing the space required at node A?

   a. Routing along A-C-D
   b. Routing A-B-C-D
   c. Using PTP protocol at A and D
   d. Using non-coherent transmission
a. Remove links A-C and A-D.
b. Remove link A-D.
c. Remove the amplifiers at node A and install high gain amplifiers at nodes B, C, and D.
d. Use a single shelf for each line at site A.

20. Which of the following is a non-linear impairment?
   a. OSNR
   b. Q factor
   c. Self phase modulation
   d. Quadrature phase modulation
Answer Key

1. A
2. B
3. A
4. A
5. B
6. D
7. A
8. B
9. D
10. D
11. A
12. B
13. D
14. D
15. B
16. B
17. C
18. B
19. B
20. C

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