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Huawei

H19-461_V1.0

HCSP-Presales-Transmission V1.0

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Question: 1

Which of the following media supports long-haul communication and provides the greatest transmission distance?

A. Multi-mode optical fiber
B. Twisted pair
C. Network cable
D. Cable
E. Single-mode optical fiber

Answer: E

Explanation:
Training Material Extract — Network Planning, Design, Configuration and Quotation Guide, Page 52
The network planning example identifies G.652 optical fiber for transmission spans and includes fiber distance, attenuation, and engineering margin as design parameters.
Technical Deep Dive:
Single-mode optical fiber is the preferred transmission medium for long-distance, high-capacity optical communication networks.
Its relatively small core, typically approximately 8–10 µm in diameter, supports propagation of the fundamental optical mode within its specified wavelength range.
This eliminates the intermodal dispersion that limits the transmission performance of multimode optical fiber.
Single-mode fiber is commonly operated within the 1310 nm and 1550 nm wavelength regions, where optical transmission characteristics are favorable.
At approximately 1550 nm, typical standard single-mode fiber attenuation is around 0.2 dB/km, although actual attenuation depends on the cable specification and installation.
Long-haul DWDM systems use single-mode fiber with coherent optical transceivers, optical amplifiers, wavelength multiplexing, and digital signal processing to transmit high-capacity services over hundreds or thousands of kilometers.
Multimode fiber is more suitable for relatively short-distance applications such as equipment-room and data-center connections.
Copper-based media, including twisted-pair Ethernet cables, have significantly shorter transmission distances without intermediate active equipment.
Technical Conclusion: E is correct because single-mode optical fiber provides the most suitable physical transmission characteristics for long-haul optical communications.

Question: 2

Which of the following are key highlights of ASON 2.0?
Select All that Apply

A. Predictive rerouting, zero service interruption
B. Fast self-healing
C. Intelligence and reliability
D. Elastic large network

Answer: A, B, C, D

Explanation:
Exact Extract — Huawei E9600 and E6600 Series Products and Industry Applications Introduction, Page 4
"ASON 2.0: self-healing within seconds"
Additional Training Reference — Page 5
The E9624 reliability architecture identifies service-level protection mechanisms including client 1+1 protection, SNCP, optical-layer 1+1 protection, and ASON 2.0.
Technical Deep Dive:
Automatically Switched Optical Network (ASON) technology introduces intelligent routing, protection, and restoration capabilities into optical transport infrastructure.
ASON 2.0 enhances conventional optical protection through improved route computation, network scalability, reliability, and automated fault recovery.
Option A — Predictive rerouting: Intelligent network monitoring and route planning can help identify potentially deteriorating transmission paths and prepare alternative routes. When suitable protection and proactive switching mechanisms are available, service disruption can be minimized or avoided.
Option B — Fast self-healing: ASON automatically computes and establishes alternative transmission paths following qualifying network failures. This reduces the need for manual service recovery.
Option C — Intelligence and reliability: The integration of control-plane automation, topology awareness, path computation, and protection mechanisms helps improve network resilience.
Option D — Elastic large network: ASON enables optical networks to scale while supporting dynamic route management and efficient utilization of network resources.
Huawei ' s more recent optical backbone material also describes large-domain ASON 2.0 scalability and fast automatic recovery.
Technical Conclusion: A, B, C, and D represent the intended ASON 2.0 highlights.
Engineering qualification: Zero service interruption is not guaranteed for every type of failure or every protection configuration. The actual recovery performance depends on the protection scheme, failure location, service type, and availability of alternate network resources.

Question: 3

On the SCT configuration-result page, some Sparts cannot be located. What could cause this?
Select All that Apply

A. They are filtered Sparts in the current wavelength selection.
B. The Sparts are removed.
C. They are filtered Sparts in the country where the BOQ is located.
D. They are filtered Sparts in the current VRC version.
E. The Sparts are displayed on the configuration board page.

Answer: A, C, D

Explanation:
Exact Extract — Network Planning, Design, Configuration and Quotation Guide, Page 61
“Wavelength Spectrum Range & Total Wavelength Quantity of System: Boards are filtered based on the wavelength spectrum range.”
Technical Deep Dive:
Huawei ' s Smart Configuration Tool uses product configuration parameters and commercial eligibility rules to determine which parts can be selected or displayed.
A Spart represents a selectable part or sales item within the product configuration environment.
Several conditions may affect the visibility of a Spart.
A. Wavelength selection filtering
Optical boards, amplifiers, multiplexers, and related components are associated with specific wavelength ranges. If the selected optical spectrum does not match the supported configuration of a component, the configurator may exclude that component.
C. Country-based restrictions
Product availability can depend on the geographical market associated with the Bill of Quantity.
Regional sales eligibility, market introduction status, and product restrictions may influence which part numbers are available.
D. VRC version filtering
Hardware and software compatibility depends on the selected product release. A component may be available in one release but not in another.
Version compatibility is important because hardware support, feature availability, and software integration requirements can change between releases.
Option B is not one of the three intended filtering conditions. However, permanently removed parts can also become unavailable in practice. Therefore, B is not an entirely impossible explanation for a missing item.
Option E concerns the location of an item within the interface rather than its exclusion by a configuration filter.
Technical Conclusion: A, C, and D match the intended filtering mechanisms. The training directly confirms wavelength-based filtering and separately confirms that removed products can disappear from SCT, making the question ' s treatment of B somewhat ambiguous.

Question: 4

The VR software package must be configured for every subrack quoted for a new deployment, and the VR version upgrade fee is required for every subrack quoted for an upgrade.

A. TRUE
B. FALSE

Answer: A

Explanation:
Exact Extract — Network Planning, Design, Configuration and Quotation Guide, Page 61

“VR Version & C Version: Select a main device version for calculating software fees. The software of a correct version is loaded to the device before delivery based on the selected device version.”
Technical Deep Dive:
VR software configuration is part of the software version and commercial licensing process for Huawei enterprise optical transmission products.
The Smart Configuration Tool (SCT) uses the selected device version and deployment type to calculate applicable software-related quotation items.
In a new installation, software configuration must be consistent with the software version and licensing requirements of the quoted equipment.
For an expansion or upgrade project, the quotation must distinguish new hardware requirements from version-related software upgrade charges.
The New or Expand parameter is particularly important because it influences the automatic configuration of supporting materials, service fees, and software upgrade calculations.
From a commercial planning perspective, software fees must be evaluated against the number of applicable devices or subracks rather than calculated solely from the number of service boards.
Incorrect version or quantity configuration may cause a discrepancy between the BOQ, software entitlement, and delivered product configuration.
Technical Conclusion: A is the intended answer under the question ' s per-subrack software licensing premise.
Verification note: The uploaded training directly confirms version-based software fee calculation but does not explicitly establish the universal per-subrack charging rule for every product and upgrade type. That detail requires confirmation against the relevant Huawei SCT quotation rules.

Question: 5

The OptiXtrans E6600 series includes the E6616, E6608, and E6608T.

A. TRUE
B. FALSE

Answer: A

Explanation:
Training Material Extract — Huawei E9600 and E6600 Series Products and Industry Applications Introduction, Page 12
The E6600 product family comparison identifies three platform models:
“OptiXtrans E6616”
“OptiXtrans E6608”
“OptiXtrans E6608T”
Technical Deep Dive:
The OptiXtrans E6600 series provides enterprise optical transmission solutions for aggregation and access applications.
The three models serve different network requirements.
OptiXtrans E6616: A 5U aggregation platform with a higher number of service slots and centralized switching capabilities for OTN, packet, and SDH transport. It is suitable for aggregation nodes and larger enterprise transmission sites.

OptiXtrans E6608: A compact 2U optical-electrical integrated transmission platform designed for network access and smaller aggregation applications. It supports centralized electrical cross-connection with the appropriate board configuration.
OptiXtrans E6608T: A compact 2U optical-layer terminal platform that supports optical and tributary-line integrated functions without centralized electrical cross-connect capability.
This product family enables enterprises to select equipment according to required switching capacity, service access, available cabinet space, power consumption, and expected network growth.
The E6616 provides greater aggregation capacity, whereas the E6608 and E6608T are appropriate for smaller transmission locations.
Technical Conclusion: A is correct. All three models are explicitly identified in the Huawei training material and official E6600 product portfolio.

Question: 6

Optical fiber sensing is primarily used in oil and gas and perimeter scenarios, and it will be expanded to transportation in the future.

A. TRUE
B. FALSE

Answer: A

Explanation:
Exact Extract — HUAWEI NCE-T Product Introduction, Page 138
“Long pipeline lines, difficult locating of intrusion events, and high inspection costs”
Additional Exact Extract — Page 138
“Warning time is shorter than 5s, false positive rate is lower than 5%, and false negative rate is 0%”
Technical Deep Dive:
Huawei ' s optical fiber sensing technology uses optical fibers as distributed sensors to detect physical disturbances and support infrastructure security monitoring.
Oil and gas pipeline protection is a major application because pipelines extend across large geographical areas and may be exposed to unauthorized excavation, deliberate interference, accidental damage, and other external threats.
Distributed optical sensing enables operators to monitor extended fiber routes without deploying conventional electronic sensors at every measurement location.
Perimeter security is another important application.
Optical fibers installed along fences, boundaries, or protected infrastructure can be used to identify vibration events associated with climbing, cutting, digging, or other suspicious activities.
Intelligent signal processing can distinguish event patterns and support accurate location identification.
Transportation applications can also benefit from optical fiber sensing. Potential applications include railway corridor surveillance, infrastructure disturbance monitoring, and the condition monitoring of transport-related industrial equipment.
Combining sensing data with GIS visualization enables operators to locate suspicious events and coordinate maintenance or security responses.
Technical Conclusion: A is consistent with the historical solution-development direction represented in the training material.

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Version-awareness note: The phrase “in the future” describes an earlier roadmap rather than a permanent technical limitation. Huawei ' s newer optical-sensing portfolio already addresses additional industrial transportation-related applications, including conveyor systems. The question should be updated if it is intended to describe the product portfolio in 2026.

Question: 7

Which of the following statements is incorrect?

A. The dispersion is in direct proportion to the fiber length.
B. The attenuation is in inverse proportion to the transmission distance.
C. The smaller the insertion loss, the better.
D. All of the above

Answer: B

Explanation:
Exact Extract — Huawei DC908 Solutions and Technologies Introduction, Page 94
“Real time data collection, analyze fiber attenuation”
Technical Deep Dive:
Optical transmission performance depends on several physical parameters, including attenuation, chromatic dispersion, polarization-mode dispersion, connector losses, and optical signal-to-noise ratio.
Option A — Correct.
For a uniform fiber with constant chromatic dispersion coefficient, accumulated chromatic dispersion increases proportionally with fiber length.
The accumulated dispersion can be calculated as:
$D_{total} = D_{\lambda} \times L$
Where D_{λ} represents the fiber dispersion coefficient in ps/(nm·km), and L represents the fiber length in kilometers.
Option B — Incorrect.
Optical attenuation increases with transmission distance rather than decreasing inversely with it.
For a uniform fiber, total fiber attenuation is:
$A_{fiber} = \alpha \times L$
Where α is the attenuation coefficient in dB/km.
For example, if the attenuation coefficient is 0.2 dB/km, a 50 km fiber has approximately 10 dB of fiber attenuation, while a 100 km fiber has approximately 20 dB, excluding connector and splice losses.
Option C — Correct.
Lower insertion loss generally indicates better optical component transmission efficiency and leaves more margin in the optical power budget.
Option D — Incorrect as the intended selection.
Not all the preceding statements are incorrect.
Technical Conclusion: B is the correct answer because it reverses the relationship between fiber length and attenuation.

Question: 8

In a coherent transmission system, if system dispersion and PMD are within the tolerance range, the dispersion penalty need not be considered.

A. TRUE
B. FALSE

Answer: A

Explanation:
Exact Extract — Network Planning, Design, Configuration and Quotation Guide, Page 51
“For a pure coherent system, dispersion does not need to be considered. Skip the step for configuring dispersion compensation.”
Technical Deep Dive:
Coherent optical transmission uses advanced modulation formats and digital signal processing (DSP) to recover optical signals affected by transmission impairments.
Two important impairments are chromatic dispersion (CD) and polarization-mode dispersion (PMD).
Chromatic dispersion occurs because different spectral components of an optical signal propagate at different group velocities. In conventional intensity-modulated transmission, accumulated dispersion can introduce substantial signal distortion.
PMD arises when two orthogonal polarization modes propagate with different group delays. Its effect is generally characterized by differential group delay (DGD).
Modern coherent receivers employ DSP functions such as adaptive equalization and chromatic dispersion compensation to mitigate these impairments.
When the accumulated dispersion and PMD remain within the receiver ' s specified compensation capability and applicable zero-penalty operating region, additional dispersion penalties need not be included in the system design.
This simplifies WDM network planning because traditional dispersion compensation modules (DCMs) are not required solely to compensate chromatic dispersion in a suitable coherent system.
Eliminating DCMs can also reduce insertion loss, optical equipment requirements, and transmission latency.
However, designers must still evaluate optical signal-to-noise ratio (OSNR), nonlinear impairments, receiver tolerances, and system margins. Being within an absolute tolerance limit does not universally guarantee zero implementation penalty.
Technical Conclusion: A is correct under the stated condition that dispersion and PMD remain within the receiver ' s applicable penalty-free tolerance.

Question: 9

Whenever a 200G pluggable optical module is used, a 200G line-side port enable RTU must be configured.

A. TRUE
B. FALSE

Answer: A

Explanation:
Exact Extract — Network Planning, Design, Configuration and Quotation Guide, Page 66
“Select the base board type for the configuration board based on the network planning result. Different base boards correspond to different WDM-side or client-side optical modules.”
Technical Deep Dive:
Huawei optical transport products may implement Right-to-Use (RTU) licensing to control the activation of line-side ports and authorized transmission capacities.
A 200G pluggable coherent optical module provides the optical interface necessary for transmitting a high-capacity wavelength. However, installing the hardware does not necessarily mean that the corresponding line port is enabled for service.
On platforms that require a 200G line-port enable RTU, the applicable license authorizes operation of the associated port.
Two licensing concepts must be distinguished:
Port enable RTU: Authorizes the use of a physical or logical line port.
Line capacity RTU: Authorizes an increase in transmission capacity beyond the capacity already included with the board.
For example, a board may support a 200G optical port physically but have a lower initial licensed capacity. Additional capacity licensing may be required before the full line rate becomes available.
The SCT configuration should therefore consider the board model, pluggable optical module, port mode, initial entitlement, and corresponding software license.
Technical Conclusion: A reflects the intended RTU-controlled 200G port scenario. However, the word whenever is too absolute: a separate enable RTU is required only where the particular board and licensing package mandate it. The exact entitlement is not established by the uploaded training extract.

Question: 10

Which of the following are selling points of super Raman?
Select All that Apply

A. Easy commissioning
B. High power, but secure as common EDFAs
C. High integration
D. Long transmission distance

Answer: A, B, C, D

Explanation:
Exact Extract — E9600 and E6600 Series Products and Industry Applications Introduction, Page 27
“Super Raman: Enabling Super 200G 5000 km Transmission Without Electrical Regeneration”
Additional Exact Extract — Page 27
“Automatic gain control”
“Real-time monitoring”
“Remote commissioning”
“Occupies only two slots, saving slots.”
Technical Deep Dive:

Raman amplification uses stimulated Raman scattering within optical fiber to provide optical signal gain. It is particularly valuable in long-haul DWDM systems where minimizing noise accumulation and improving transmission reach are important.
Option A — Correct: Huawei Super Raman supports automatic gain control, real-time monitoring, and remote commissioning. These capabilities simplify amplifier configuration and reduce the requirement for manual field adjustments.
Option B — Correct: Raman amplifiers use high-power optical pump sources. Huawei incorporates safety mechanisms that automatically disable pump lasers when qualifying faults are detected. This provides protective behavior comparable in purpose to established EDFA laser-safety mechanisms.
Option C — Correct: The Super Raman solution integrates amplification functions into a compact pluggable board architecture. Huawei identifies a two-slot implementation, improving cabinet and board-slot utilization.
Option D — Correct: Raman amplification can improve the optical signal-to-noise ratio by reducing the effective noise contribution of the transmission span.
Huawei identifies a noise-figure improvement of approximately 2 dB compared with the referenced conventional Raman amplifier arrangement, supporting longer optical transmission distances.
The training also illustrates a 200G transmission scenario reaching 5,000 km without intermediate electrical regeneration under its specified system conditions.
Technical Conclusion: A, B, C, and D are correct. They represent simplified commissioning, safety protection, compact integration, and extended optical reach.

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