



EEEN 464 – DIGITAL COMMUNICATION

TELECOMMUNICATION ACCESS NETWORKS - TEST YOUR KNOWLEDGE

1. What does the term 'last mile' refer to in telecommunications?

- a) The final segment of the transmission network connecting to end-users
- b) The longest distance between two network nodes
- c) The backbone network between cities
- d) The underwater portion of international cables

Answer: a

2. Which technology uses existing telephone lines to provide high-speed internet access?

- a) DOCSIS
- b) DSL
- c) PON
- d) LTE

Answer: b

3. What does FTTH stand for?

- a) Fiber to the Home
- b) Fiber to the Hub
- c) Fixed Telephone to Home
- d) Fast Transmission to Household

Answer: a

4. Which access technology typically provides asymmetric speeds?

- a) SDSL
- b) GPON
- c) ADSL
- d) Metro Ethernet

Answer: c

5. What is the primary advantage of PON (Passive Optical Network) technology?

- a) It requires no active components between central office and customer
- b) It uses existing coaxial cable infrastructure
- c) It supports longer distances than DSL

d) It provides dedicated bandwidth to each subscriber

Answer: a

6. Which standard is used for cable modem systems?

a) IEEE 802.11

b) DOCSIS

c) ITU-T G.992

d) 3GPP

Answer: b

7. In a GPON network, what device is located at the customer premises?

a) OLT

b) Splitter

c) ONT

d) CMTS

Answer: c

8. Which wireless technology is typically used for fixed wireless access?

a) Bluetooth

b) Wi-Fi

c) WiMAX

d) Zigbee

Answer: c

9. What is the main limitation of ADSL technology?

a) High cost

b) Limited upload speed

c) Signal interference from radio waves

d) Degraded performance over long distances

Answer: d

10. What does VDSL stand for?

a) Very-high-data-rate Digital Subscriber Line

b) Video Digital Subscriber Line

c) Voice Data Subscriber Line

d) Virtual Digital Subscriber Line

Answer: a

11. Which of the following is a characteristic of cable internet access?

a) Dedicated bandwidth for each user

b) Uses fiber exclusively to the home

- c) Bandwidth is shared among users in the same area
- d) Symmetric speeds for upload and download

Answer: c

12. What is the theoretical maximum download speed of DOCSIS 3.1?

- a) 100 Mbps
- b) 1 Gbps
- c) 10 Gbps
- d) 100 Gbps

Answer: c (10 Gbps downstream)

13. Which technology is used to provide internet access via satellite?

- a) VSAT
- b) DSL
- c) PON
- d) FTTN

Answer: a

14. What is the primary benefit of fiber optic access networks?

- a) Lower cost than DSL
- b) Immunity to electromagnetic interference
- c) Uses existing telephone lines
- d) Easy installation

Answer: b

15. Which of these is a type of FTTx where fiber terminates at a street cabinet?

- a) FTTH
- b) FTTB
- c) FTTC
- d) FTTN

Answer: c (FTTC) or d (FTTN) is also common, but FTTC is more precise (curb). However, note that FTTN (node) is also a term. We'll use FTTC for this.

16. What does the acronym 'ONT' stand for?

- a) Optical Network Terminal
- b) Optical Network Transceiver
- c) Optical Node Termination
- d) Optical Network Technology

Answer: a

17. Which technology combines both fiber and coaxial cable in a hybrid network?

- a) FTTx
- b) HFC
- c) DSL
- d) PON

Answer: b (Hybrid Fiber-Coaxial)

18. What is the purpose of a DSLAM?

- a) To amplify DSL signals over long distances
- b) To terminate DSL connections from multiple users
- c) To convert optical signals to electrical signals
- d) To provide wireless access

Answer: b

19. Which of the following is not a common access network technology?

- a) DSL
- b) MPLS
- c) Cable
- d) Fiber

Answer: b (MPLS is a core network technology)

20. What is the main advantage of 5G fixed wireless access?

- a) Lower latency than fiber
- b) No need for wired infrastructure to the home
- c) Higher speeds than DOCSIS 3.1
- d) Unlimited data usage

Answer: b

21. Which frequency bands are typically used by 5G fixed wireless access for higher speeds?

- a) Low bands (below 1 GHz)
- b) Mid bands (1-6 GHz)
- c) High bands (mmWave, above 24 GHz)
- d) All of the above

Answer: c (mmWave for highest speeds, though mid-bands are also used)

22. What technology is used to increase bandwidth in DSL systems by using multiple frequencies?

- a) Time Division Multiplexing
- b) Orthogonal Frequency Division Multiplexing
- c) Code Division Multiple Access
- d) Frequency Hopping

Answer: b

23. Which of the following is a next-generation PON standard?

- a) GPON
- b) EPON
- c) XG-PON
- d) BPON

Answer: c (XG-PON is 10G PON)

24. In a cable network, what device manages the communication with cable modems?

- a) DSLAM
- b) OLT
- c) CMTS
- d) ONT

Answer: c

25. Which of the following is a disadvantage of satellite internet access?

- a) High latency
- b) Limited availability
- c) Weather interference
- d) All of the above

Answer: d

26. What is the typical maximum range for VDSL2 without significant speed degradation?

- a) 300 meters
- b) 1.2 km
- c) 5 km
- d) 10 km

Answer: b (about 1.2 km)

27. Which access technology uses the IEEE 802.11 standard?

- a) Wi-Fi
- b) WiMAX
- c) LTE
- d) Bluetooth

Answer: a

28. What is the primary use of G.fast technology?

- a) Long-range rural connections
- b) High-speed connections over very short copper lines
- c) Underwater communications
- d) Satellite backhaul

Answer: b

29. What does FWA stand for?

- a) Fixed Wireless Access
- b) Fiber Wireless Access
- c) Fast Wireless Access
- d) Frequency Wireless Access

Answer: a

30. Which organization develops the DOCSIS standards?

- a) IEEE
- b) ITU-T
- c) CableLabs
- d) 3GPP

Answer: c