


Quality of Service

Date: Spring

Duration: 50 min.

- There is only one correct answer for each multiple choice question.
- Each correct answer adds 1 point.
- Each incorrect answer has a penalty of $\frac{1}{3}$ points.
- No score is awarded for unanswered questions, neither positive nor negative.
- Mark out your answers with an “X”. Make sure that the “X” reaches the corners of the rectangle. 
- No score is awarded if you mark more than one answer.
- Pad your NIA with 0s on the left to complete the NIA field.

Write your personal data clearly.

Last name:	
First name:	
Group:	

Permutation: A

NIA:

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- 1.- Where is traffic normally exchanged between ISPs?
 - (a) In a route reflector.
 - (b) In transoceanic cables.
 - (c) In interior routers protocols.
 - (d) In an Internet Exchange Point.

- 2.- Does BGP include some kind of security measure to protect itself from forged packets?
 - (a) No. Security is not required because the TCP protocol is used.
 - (b) Yes. A shared secret and an MD5 digest can be used for security.
 - (c) Yes. BGP information is transmitted using the HTTPS protocol.
 - (d) No, because BGP is only an informative protocol.

- 3.- BGP uses ...
 - (a) link state routing.
 - (b) random routing.
 - (c) distance vector routing.
 - (d) path routing.

- 4.- Which of the following is not a BGP message?
 - (a) DROP DEFAULT
 - (b) KEEP-ALIVE
 - (c) ROUTE-REFRESH
 - (d) NOTIFICATION

- 5.- What is BGP used for?
 - (a) To modify the packets that cross AS borders.
 - (b) To exchange routes between RIP and OSPF.
 - (c) To prioritize VoIP calls.
 - (d) To exchange routes between ASs.

- 6.- Which of the following announcements can be aggregated?
 - (a) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/18.
 - (b) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/16.
 - (c) 172.16.0.0/17 and 172.16.128.0/17 to 172.16.0.0/16.
 - (d) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/24.

- 7.- Why are “sequences” and “sets” allowed in route announcements?

- (a) Sequences are for IBGP and sets for EBGP.
- (b) To route between IPv4 and IPv6 networks.
- (c) To make it possible route aggregation of announcements with different paths.
- (d) To support transit ASs and stub ASs.

8.- Why is not possible to use RIP as a border gateway protocol?

- (a) BGP is a distance-vector protocol.
- (b) BGP minimizes the number of hops.
- (c) BGP is a link-state protocol.
- (d) BGP has to take into account policy.

9.- Which of the following statements is false regarding peering?

- (a) Routes obtained from peers are not relayed to service providers.
- (b) A small ISP normally reaches a peering agreement with an international Tier-1 carrier.
- (c) ISPs prefer a peering agreement to paying for transit.
- (d) A pair of peering AS establish a BGP session to exchange routes.

10.- What is an autonomous system?

- (a) A network that is not connected to the Internet.
- (b) A network under the same administrative domain.
- (c) A network of a country.
- (d) A network with more than one BGP router.

11.- An ISP receives routes announcement from one of its clients. To which neighbours are these announcements relayed?

- (a) Only to other clients.
- (b) Only to other peers.
- (c) To all neighbours.
- (d) Only to providers.

12.- What does BGP stands for?

- (a) Bridge Greening Protocol.
- (b) Best Goal Practices.
- (c) Biased Genesis Packet.
- (d) Border Gateway Protocol.

13.- Does inter-AS routing always follow the shortest path?

- (a) No, policy is also taken into account in making routing decisions.

- (b) Yes, the path with the smaller number of AS is followed.
- (c) Yes, the path with the smaller number of routers is followed.
- (d) No, inter-AS routing uses OSPF which includes a link metric to take into account the available bandwidth.

14.- What is BGP used for?

- (a) To exchange routes between RIP and OSPF.
- (b) To prioritize VoIP calls.
- (c) To exchange routes between ASs.
- (d) To modify the packets that cross AS borders.

15.- If no reflectors and confederations are not used, what differentiates EBGP and IBGP?

- (a) EBGP works at layer-3 and IBGP at layer-2.
- (b) Routes learned from EBGP are distributed to all neighbours while routes learned from IBGP are distributed only to EBGP neighbours.
- (c) IBGP is used for communication between ASs and EBGP is used for communication within an AS.
- (d) EBGP uses TCP and IBGP uses UDP.

16.- What is the DFZ and where it is located?

- (a) Default-Free Zone which is located in routers of Tier-1 ISPs.
- (b) Demilitarized Friendly Zone which is located in the BGP router that announces the default route.
- (c) Demilitarized Friendly Zone which is announced in the RIP protocol.
- (d) Default-Free Zone which is located in a home router.

17.- An AS prefers ...

- (a) ... to route traffic towards a provider to route traffic towards a peer.
- (b) ... to route traffic towards a peer to route traffic towards a client.
- (c) ... to route traffic towards a provider to route traffic towards client.
- (d) ... to route traffic towards a client to route traffic towards a peer.

18.- How does BGP prevent routing loops?

- (a) Using the count-to-infinity mechanism.
- (b) By inserting a maximum hop-count in route announcements.
- (c) AS reject route announcements that include their ASN in the path.
- (d) By means of the split horizon.

19.- A BGP router establishes BGP sessions ...

- (a) ... with all the autonomous systems of the Internet.
- (b) ... with all the routers of the Internet.
- (c) ... with all the BGP routers of the Internet Exchange Point.
- (d) ... with those peers that have been selected by the network administrator.

20.- Which of the following is typically not an Autonomous System?

- (a) A large multi-homed BGP network connected to two or more ISPs.
- (b) A Tier-1 ISP such as Cogent.
- (c) A Tier-2 ISP that purchases some IP transit.
- (d) A home network with more than three routers.

21.- Which of the following is not an interior gateway routing protocol?

- (a) STP.
- (b) IS-IS.
- (c) OSPF.
- (d) RIP.

22.- In an inter-AS transit connection ...

- (a) ... the client pays to the service provider.
- (b) ... the service provider pays to the client.
- (c) ... the AS with more routes pays to the AS with less routes.
- (d) ... no payment is made.

23.- Which of the following is a longer prefix?

- (a) /8.
- (b) /23.
- (c) /24.
- (d) /16.

24.- How is policing implemented in BGP?

- (a) Using route announcements and routing decisions.
- (b) Using only routing decisions.
- (c) Rejecting all route announcements and making no routing decisions.
- (d) Using only route announcements.

25.- Which BGP message is used to send routing information?

- (a) NOTIFY.
- (b) NEW ROUTE.

- (c) HELLO.
- (d) UPDATE.

26.- Which transport protocol is used for BGP sessions?

- (a) TCP
- (b) UDP
- (c) RSVP
- (d) ICMP

27.- How can you hijack Internet traffic?

- (a) By closing all BGP sessions.
- (b) By increasing the number of routers in your network.
- (c) By announcing a prefix belonging to someone else.
- (d) By announcing a prefix of a network of your AS.

28.- What does an AS do when relaying a route announcement?

- (a) Remove one AS number from the path.
- (b) Duplicate an AS number from the path.
- (c) Appending its own AS number in the route path.
- (d) Multiply two AS numbers of the path.