


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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	A	B	C	D
1				
2				
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10				
11				
12				

Below the grid, there are four black squares, one under each column, and a horizontal line with a black square at the end.

- 1.- To which neighbors is relayed the route announcement information obtained from clients of the ISP?
 - (a) Only to providers.
 - (b) To all neighbours.
 - (c) Only to other clients.
 - (d) Only to other peers.

- 2.- An AS prefers ...
 - (a) ... route traffic towards a provider to route traffic towards client.
 - (b) ... route traffic towards a peer to route traffic towards a client.
 - (c) ... route traffic towards a client to route traffic towards a peer.
 - (d) ... route traffic towards a provider to route traffic towards a peer.

- 3.- Which of the following is not an interior gateway routing protocol?
 - (a) STP.
 - (b) RIP.
 - (c) OSPF.
 - (d) IS-IS.

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

- 5.- How is policing implemented in BGP?
 - (a) Using only routing decisions.
 - (b) Rejecting all route announcements and making no routing decisions.
 - (c) Using route announcements and routing decisions.
 - (d) Using only route announcements.

- 6.- 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 MD5 digest can be used for security.
 - (c) No, because BGP is only an informative protocol.
 - (d) Yes. BGP information is transmitted using the HTTPS protocol.

- 7.- What is BGP used for?

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

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

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

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

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

10.- How can you hijack Internet traffic?

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

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

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

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

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

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

- (a) IBGP is used for communication between ASs and EBGP is used for communication within an AS.

- (b) EBGp uses TCP and IBGP uses UDP.
- (c) IBGP accepts announcement with its own AS number in the path and does not relay such announcements.
- (d) EBGp works at layer-3 and IBGP at layer-2.

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

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

15.- What does BGP stands for?

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

16.- Where is traffic normally exchanged between ISPs?

- (a) In transoceanic cables.
- (b) In a route reflector.
- (c) In interior routers protocols.
- (d) In an Internet Exchange Point.

17.- Which of the following announcements can be aggregated?

- (a) 172.16.0.0/17 and 172.16.128.0/17 to 172.16.0.0/16.
- (b) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/18.
- (c) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/24.
- (d) 172.16.0.0/17 and 172.16.1.0/17 to 172.16.0.0/16.

18.- BGP uses ...

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

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

- (a) A pair of peering AS establish a BGP session to exchange routes.
- (b) ISPs prefer a peering agreement to paying for transit.

- (c) A small ISP normally reaches a peering agreement with an international Tier-1 carrier.
- (d) Routes obtained from peers are not relayed to service providers.

20.- What is the DFZ zone and where it is located?

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

21.- A BGP router establishes BGP sessions ...

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

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

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

23.- What is BGP used for?

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

24.- What is an autonomous system?

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

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

- (a) Yes, the path with the smaller number of AS is followed.
- (b) No, policy is also taken into account in making routing decisions.
- (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.