TCP/IP Networking 2016 Test 5

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Grading:
For each question, exactly one of the four proposed answers is correct. If the good answer and only the good answer box is crossed ⇒ +1 point. If one bad answer box is crossed and no other box is crossed ⇒ $-\frac{1}{3} = -0.333$ point. If 0 or more than 1 answer box is crossed ⇒ +0 point.
⟵ Please encode your SCIPER number here and write your full name in the box below. ↓

Name, First Name:

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Question 1 "Redistribution of BGP into the IGP" means :

☐ All routes leant by BGP are repeated inside the internal BGP mesh as long as they are allowed by import and export policies.

☐ All routes leant by E-BGP are repeated inside the internal BGP mesh as long as they are allowed by import and export policies.

☐ All routes leant by I-BGP are repeated inside the internal BGP mesh as long as they are allowed by import and export policies.

■ All network prefixes learnt by BGP are propagated by the interior routing protocol inside the autonomous system.

Question 2 A TCP-friendly application is...

☐ A TCP application that fully exploits the congestion control features of TCP.

■ A UDP application that sends at a rate similar to what it would obtain if it were using TCP.

☐ A TCP application that fully exploits the streaming oriented nature of TCP.

☐ A UDP application that gives priority to TCP flows.

Question 3 Say which of the following statements are true:

1. when a BGP router R receives a route from a BGP peer R', R knows that R' has selected this route as best route
2. I-BGP peers must be on-link

■ 1 and not 2. ☐ 2 and not 1. ☐ 1 and 2. ☐ Neither 1 nor 2.

Question 4 Say what is true:

1. The goal of Explicit Congestion Notification (ECN) is to avoid packet losses due to congestion in routers, when combined with TCP congestion control.
2. When a router implements Random Early Detection (RED) it may discard packets even when buffers are not full.

☐ Neither 1 nor 2. ■ Both 1 and 2. ☐ 1 and not 2. ☐ 2 and not 1.

Question 5 A BGP router R learnt a route from an I-BGP peer and accepts it as a new best route. The import and export policies allow the route. Say which of the following statements are true

1. R can export the route to any I-BGP peer
2. R can export the route to any E-BGP peer if this creates no AS path loop

☐ 1 and 2. ☐ 1 and not 2. ☐ Neither 1 nor 2. ■ 2 and not 1.

Question 6 Say which of the following statements are true:

1. a BGP router periodically sends all its best routes to its BGP neighbours as long as the export policy allows
2. a BGP router periodically sends all the routes it knows of to its BGP neighbours as long as the import and export policies allow

☐ 2 and not 1. ☐ 1 and 2. ■ Neither 1 nor 2 ☐ 1 and not 2.

Question 7 When a TCP source detects by timeout that a packet is lost...

■ it goes into slow start.
☐ it goes into fast recovery.
☐ it goes into congestion avoidance.
☐ it divides the congestion window by 2.

Question 8 The BGP router R receives the following updates, which are both accepted by the import policy.

```
DEST = 9.9.8/23 AS-PATH= 666 555 444 NEXT-HOP = 1.2.3.4
DEST = 9.9.9/24 AS-PATH= 333 222 111 999 NEXT-HOP = 4.3.2.1
```

R has no other route to theses destinations. Which routes will the decision process select ?

☐ The first and not the second. ■ Both. ☐ The second and not the first. ☐ None.

Question 9 Which of the formulas below gives the throughput θ of a non-ECN long-lived TCP connection with round trip time T and constant segment size L that experiences loss probability q (where C is some numerical constant) ?

■ $\theta = \frac{CL}{T\sqrt{q}}$. ☐ $\theta = \frac{CT}{L\sqrt{q}}$. ☐ $\theta = \frac{C}{LT\sqrt{q}}$. ☐ $\theta = \frac{C\sqrt{q}}{TL}$

Question 10 For long lived TCP connections, the rate they obtain is according to...

■ a concave utility function that has a bias in favour of connections with small RTT.
☐ a utility function that expresses maxmin fairness but with a bias in favour of connections with small RTT.
☐ a utility function that expresses maxmin fairness but with a bias in favour of connections with large RTT.
☐ a concave utility function that has a bias in favour of connections with large RTT.