Question 1  **“Redistribution of BGP into the IGP” means:**

- All routes learnt by BGP are repeated inside the internal BGP mesh as long as they are allowed by import and export policies.
- All routes learnt by E-BGP are repeated inside the internal BGP mesh as long as they are allowed by import and export policies.
- All routes learnt 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 these 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 $\theta$ 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) ?

- [ ] $\theta = \frac{CL}{\sqrt{q}}$.
- [ ] $\theta = \frac{CT}{\sqrt{q}}$.
- [ ] $\theta = \frac{C}{T\sqrt{q}}$.
- [ ] $\theta = \frac{C\sqrt{q}}{T}$.

**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 concave utility function that has a bias in favour of connections with large RTT.