NAME: xxxxx

STUDENT NUMBER: _____________________

This is a closed book exam. You have xxx minutes to complete xx questions. Please write neatly and clearly. You should have xx pages.

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Score: ____________/100
Sample Multiple Choice

1. (2 points) Which of the following is not a network topology:
   a) Ring
   b) Mesh
   c) Star
   d) SONET

2. (2 points) ATM network is a ___________ technology
   a) Connection-oriented
   b) Circuit-oriented
   c) Both and b
   d) None of the above

3. (2 points) Which of the following is true:
   a) SONET and WDM are both optical network technology
   b) WDM replaces legacy SONET
   c) SONET replaces legacy WDM
   d) Both a and b

4. (2 points) In an ISP network, Border routers connect:
   a) Both core router/s and other ISP’s border router/s
   b) Only core router/s
   c) Edge and Access
   d) None of the above

5. (2 points) In FTTN, fiber-drop happens _____.
   a) At the customer premise
   b) At the nearest optical node from the customer prem
   c) Both a and b possible
   d) None of the above

6. (2 points) In an ISP, which business unit works very closely with the equipment manufacturers (vendors)?
   a) Network Planning
   b) Technology Development
   c) Network Operations
   d) Network Economics

7. (4 points) Network QoS represents:
   a) Network latency
   b) Network cost
c) Both a and b
d) None of the above

8. (2 points) Symmetric key cryptography is based on _____.
a) Shared key
b) Private key
c) Public key
d) None of the above

9. (2 points) Which of the following is not part of a network security framework?
a) Data Confidentiality
b) Data Integrity
c) Data redundancy
d) Authentication

10. (2 points) Network Honeypot is used to _____________?

   a) learn about intruders’ behaviour
   b) forecast an upcoming attack
c) Both a and b
d) None of the above
Sample True/False

1. (1 point) Today’s networks are mainly based on IP network protocol (T / F)

2. (1 point) On-net improves network QoS (T / F)

3. (1 point) In order to have a network connection between two ports, both the ports must operate at the same data rate and exactly same port type (T / F)

4. (1 point) Network Technology Development business unit often closely collaborate with Marketing business unit (T / F)

5. (1 point) Firewall is not a part of network IDS / IPS (T / F)

6. (1 point) Asymmetric cryptography is more secured than symmetric cryptography (T / F)

7. (1 point) Honeypot is a trap for network intruders (T / F)

8. (1 point) Communication between a cell phone user and the cell tower is an example of network Edge (T / F)

9. (1 point) Purchasing network equipment is considered as network CAPEX (T / F)

10. (1 point) QoE has no relation with network QoS (T / F)
Sample Questions

1. Define Hybrid network topology. Why redundancy is essential in a network? (2+2)

2. Explain the relationship between network access, edge, core, and border? (4)

3. Given a forecast traffic for a specific CO, what would be the steps that you would follow to map that forecast traffic into the network CAPEX required for that CO? (5)

4. Name three internal and three external traffic forecast metrics. (3)

5. What is the main difference between FTTN and FTTH? Name two main advantages of FTTH over POTS. (2+2)

6. What is the main challenge in network modernization process? If you are the network manager, how would you address this challenge? (2+3)

7. What is on-net and off-net traffic? Why ISPs are in favour of reducing off-net traffic and increasing on-net traffic presence? (2+3)

8. Name three major benefits that a wireless access network provides compare to wired access? What is the difference between WAP and WEP? (3+2)

9. Briefly describe the steps involved in the man-in-the-middle attack in WPA environment? (3)

10. In a cryptography environment, if Alice sends a message $m$ to Bob using Alice’s encrypted key $K_A$ i.e., $(K_A (m))$; and if Bob uses his key $K_B$ to decrypt $m$ then what is the relationship between $K_A$ and $K_B$ in $K_B (K_A (m))$? (3)
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