

## **TNE30009 Week 2**

### **Question 1**

1. What are the three goals of network security?
2. What is the difference between a security policy and a security control?
3. In the following scenarios, which goal has been compromised?
  - a. A hacker vandalises the company's corporate website.
  - b. The corporate email system is hacked. As well as reading the contents, the hacker deletes some important emails.
  - c. Communications between you and your website hosting service are brought down by a successful denial of service attack on your local VPN server.

### **Question 2**

1. What access network technologies might be a good choice in the following scenarios?
  - a. An industrial process monitoring low bit rate sensors and activating low bit rate actuators but with deterministic delay
  - b. An industrial process requiring video
2. What are the main ways we classify access network technologies?
3. Outline the main characteristics of the following access networks.
  - a. 5G NR
  - b. WLAN (IEEE 802.11)
4. What is the role of DHCP and DNS in the operation of modern networks?

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### Question 3

1. What is the three-way handshake in TCP? Is there a similar handshake in UDP? Why?
2. What is the effect on throughput of increasing round trip time on a TCP connection? Assume window size stays constant.
3. Why is TCP's flow control mechanism problematic when operating over wireless network links?
4. A host (A) wishes to communicate with a host (B). Host A's ISN is 2500. Host B's ISN is 3400. Show the flow of messages in setting up the handshake including the ACK and SYN flags.
5. In the following exchange, what (probably) is the TCP window size? What (probably) is the size of each data segment?

