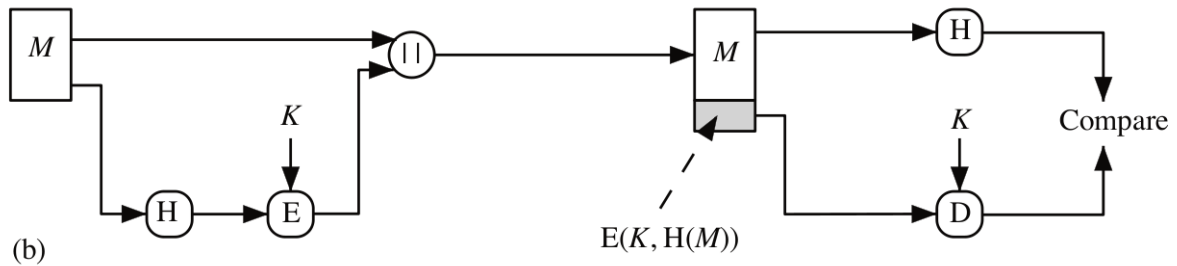


CSS322 – Quiz 5

Name: _____ ID: _____ Marks: _____ (10)

Question 1 [3 marks]

Consider the mechanism illustrated below and the six security services: confidentiality, authentication, non-repudiation, data integrity, access control and availability.

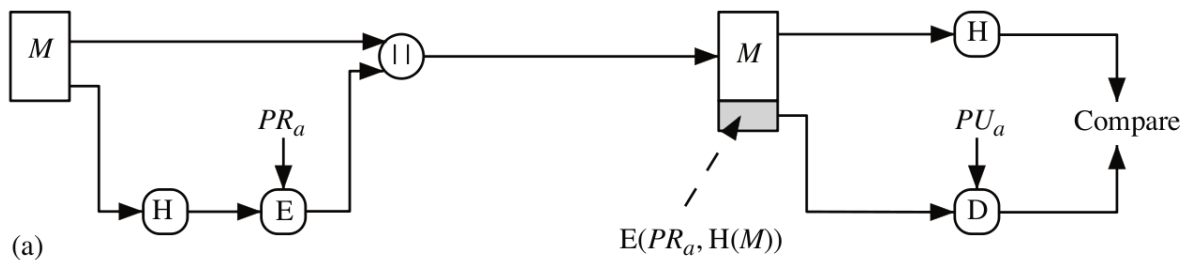


(a) What security service(s) does the mechanism provide? [1 mark]

(b) Assuming it is impossible for an attacker to discover K or break $E()$ or $D()$, explain what an attacker needs to do break the above mechanism (that is, so one of the security services is compromised). [2 marks]

Question 2 [3 marks]

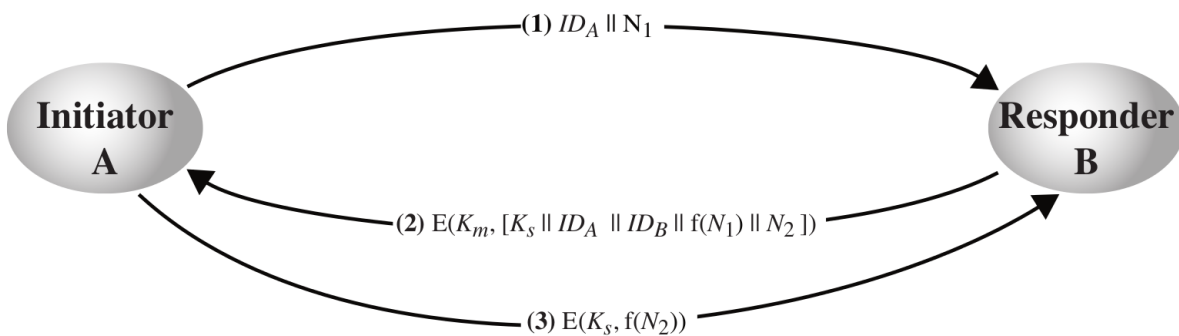
Consider the mechanism illustrated below.



- (a) The mechanism is a special case of authentication. What is its name? [1 mark]
- (b) An example of E()/D() in the above mechanisms may be RSA. Explain why if 3DES was used as E()/D() instead, then the above mechanism would not provide the same service as when RSA was used. [2 marks]

Question 3 [4 marks]

Considered the key distribution scheme below.



- (a) For this scheme to work, what keys are known by A and B before the 3 steps are taken? [1 mark]
- (b) Assume an attacker sent message 1 pretending to be A (instead of A sending message 1). Explain how either A or B would detect this attack. [2 marks]
- (c) Describe an advantage of the above scheme. [1 mark]