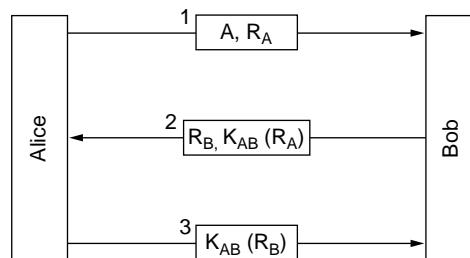


- 1a Explain what Time Division Multiplexing is. 5pt
- 1b "It is unusual to use a 2400 baud modem. Nowadays, modems can support at least 28 kbps." What is wrong with this statement. Motivate your answer. 10pt
- 2a How many sequence numbers are needed in a sliding window protocol in which sender and receiver each maintain a window of size  $N$ . Explain your answer. 5pt
- 2b When using a sliding window protocol, should the window size in the case of satellite connections be large or small? Explain your answer. 5pt
- 2c Are error-correcting codes more or less efficient than error-detecting codes? Explain your answer! 10pt
- 3a Explain how distance vector routing works. 10pt
- 3b Explain how weighted fair queuing works, and why it is being used. 5pt
- 3c Explain the principal working of Classless InterDomain Routing (CIDR). 10pt
- 3d Explain how subnet masking works and what its purpose is. 5pt
- 4a Explain how the following authentication protocol works, and how it can easily be successfully attacked. 5pt



- 4b Give at least four reasons why it is better to use session keys instead of alternative key mechanisms for cryptography. 5pt
- 4c Describe a method for signing and transmitting a document without having to encrypt the entire document. 5pt
- 5 Assume we need to transfer a relatively small file from  $A$  to  $B$ . The distance between  $A$  and  $B$  is in the order of a few thousand miles. Let  $T$  be the total time it takes to transfer the file, and  $b$  the bandwidth of the connection between  $A$  and  $B$ . Draw  $T$  as a function of  $b$ , and explain your graph where necessary. 10pt

**Grading:** The final grade is calculated by accumulating the scores per question (maximum: 90 points), and adding 10 bonus points. The maximum total is therefore 100 points.