

**Computer science**  
**Higher level**  
**Paper 3**

Wednesday 20 May 2015 (morning)

1 hour

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**Instructions to candidates**

- Do not turn over this examination paper until instructed to do so.
- Answer all questions.
- The maximum mark for this examination paper is **[30 marks]**.

Answer **all** questions.

1. (a) Define the term *brute-force decryption*. [2]  
(b) Outline the role of the *Device Description Repository* in mobile banking. [2]
  
  2. (a) The Case Study suggests that providing both security and usability can be “a difficult compromise” (page 2).  
Explain why this may be true, with specific reference to an area referred to in the Case Study. [4]  
(b) Describe how the SSL protocol involves the use of both symmetric and asymmetric encryption. [4]
  
  3. An attack specifically targeted at bank transactions is called the *Man-in-the-Browser* attack.  
(a) Outline how this attack is carried out. [2]  
(b) Explain why only some methods of authentication are able to counter this type of attack. [4]
  
  4. *TransEuropa* has decided to focus on the use of QR codes, instead of NFC, with its mobile payments app. This app will allow payments to be made in different stores and for cash to be taken out at ATMs.  
  
By making a comparison of the two technologies, discuss the reasons why QR codes have been chosen over the use of NFC. [12]
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