



Student Name:.....

Mobile Commerce

June 26, 2002

FINAL EXAM

Vrije Universiteit Amsterdam

IMPORTANT NOTICE: This is a **closed book** exam. You are supposed to answer the questions on your own, i.e. without the use of a computer, books or any other material and without discussing the exam with anyone else. Cheating will not be tolerated and will be handled according to strict University policies.

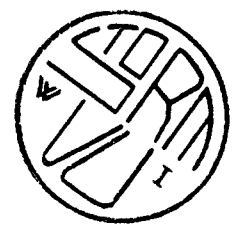
This exam has been designed to test your overall knowledge and understanding of the material covered in the course. It consists of **a total of 6 questions for a total of 100 points**. Please make sure to answer in the space provided under each question. Answers will be evaluated based on content rather than length. In other words, there are no extra points for providing long answers.

This exam is not meant to be stressful and should not take you more than an hour to complete. You are however given a total of two hours to answer the questions. **Please make sure that your handwriting is legible and that you have printed your name at the top of each page. Good luck!**

Student Name:.....

Student ID Number:.....

Score:	
1	___ / 20
2	___ / 15
3	___ / 20
4	___ / 20
5	___ / 19
6	___ / 6
	___ / 100



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Question 1 (20 points):

Today, the Wireless Application Protocol (WAP) supports 2 protocol stacks, a legacy stack and a newer stack introduced in WAP2.0 a few months ago. This latter stack is specifically intended for fast bearer services with built-in IP. The legacy stack on the other hand makes a number of sacrifices to accommodate a much broader range of bearer services such as GSM, TDMA or even SMS.

1. List one major such sacrifice (5 points – limit your answer to 3 lines)

2. What was the main motivation for accommodating 2G standards such as GSM or TDMA? (2 points – limit your answer to 3 lines)

3. List 3 innovations introduced in WAP and WML to enhance usability. (9 points)
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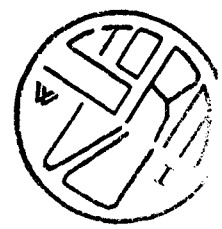
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4. Some people have argued that the WAP legacy protocol stack should never have been developed and that, instead, the new protocol stack is all that is needed. Give one argument to support this view (4 points). Limit your answer to 4 lines.

Question 2 (15 points):

One of the challenges associated with mobility has to do with the need to adapt version 4 of the IP protocol. In theory however one could possibly consider keeping the IP protocol as is and instead use either one of the following two approaches:

Approach 1: Using host-specific routing



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This approach would simply involve having host specific entries for mobile nodes in the routing tables of relevant routers. When consulting these routing tables, IP would simply pick the host-specific matching routes in preference to matching prefix routes.

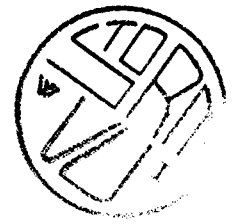
Approach 2: Changing the mobile node's IP address as it moves from one link to another:

This approach would involve modifying the mobile node's IP address as it moves from one link to another in such a way that its address always matches the prefix of the network it is currently attached to.

Question 2a (5 points): Please identify one major problem associated with Approach 1:

Question 2b (5 points): Please identify one major problem associated with Approach 2:

Question 2c (5 points): A better approach is known as "Mobile IP". In no more than 10 lines, please outline how mobile IP works. You will not be penalized if you do not remember the exact terminology. Just make sure to outline the basic principles of mobile IP. If necessary, feel free to draw a diagram.



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Question 3 (20 points):

Question 3 a (10 points). With 30+ million users in Japan, i-mode is today's most popular m-Commerce portal. Identify 5 key factors that have contributed to the success of the service. Limit your answers to 2 lines per factor.

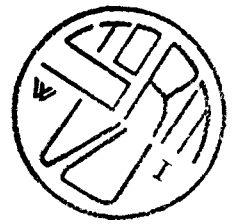
- 1.
- 2.
- 3.
- 4.
- 5.

Question 3b (6 points) The success of early WAP services in the US and Europe has been rather mitigated. Identify 3 key reasons (maximum of 2 lines for each).

- 1.
- 2.
- 3.

Question 3c (4 points) Adaptations of the i-Mode service are being launched in cities in the US and Europe. Give two reasons why operators have waited for GPRS to be deployed before launching these services? Limit your answers to 2 lines per reason.

- 1.
- 2.



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Question 4 (20 points):

Question 4a (12 points)

In comparison with the fixed Internet, m-Commerce security introduces a number of additional challenges. List three such challenges and, for each, suggest a possible solution.

1. Challenge (2 points)

- Possible solution (2 points)

2. Challenge (2 points)

- Possible solution (2 points)

3. Challenge (2 points)

- Possible solution (2 points)

Question 4b (8 points)

GSM cell phones have a Subscriber Identity Module (SIM) embedded in them. WAP introduces a similar security module known as the Wireless Identity Module (WIM). How could the introduction of the WIM possibly change the m-Commerce value chain? Limit your answer to 4 lines.



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Question 5 (19 points):

Question 5a (3 points). Suppose that you launch a mobile game business and decide to position yourself as a provider of games that run remotely on servers and are accessed from mobile phones. List three technical or business challenges that you might have to address as you work with different mobile operators.

1.

2.

3.

Question 5b (3 points). Give one business reason why a Wireless ASP business model is particularly appealing? Limit your answer to 3 lines.

Question 5c (4 points). List four possible sources of revenue available under such a business model?

1.

2.

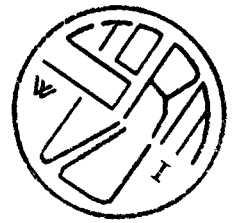
3.

4.

Question 5d (2 points): How does WAP help reduce your development costs? Limit your answer to 2 lines.

Question 5e (1 point): Give one reason why you would want to develop games that require Java-enabled phones. Limit your answer to 2 lines.

Question 5 f (1 point): Give one reason why you would not want to develop games that require Java-enabled phones. Limit your answer to 2 lines.



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Question 5g (5 points): How would the adoption of 3GPP's Open Service Access (OSA) architecture help your business? Limit your answer to 5 lines.

Question 6 (6 points):

Some analysts have predicted that mobile advertising will generate billions of dollars in the years to come. List three factors that could help improve user acceptance of mobile advertising. Limit your answers to 2 lines per factor.

1.

2.

3.



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Feedback (optional):

- If you feel that a question was unclear, please indicate below the number of the question and provide a brief explanation.
- Was preparation for this exam a good way to get you to go over the class material again? Would you have reviewed the material otherwise?
- Do you feel that this test was fair? If not, what would you have done differently?
- How long did it take you to finish this exam?