



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN INFORMATION COMMUNICATION
TECHNOLOGY
(BTICT 11M – Y4 S1)

EIT 4402: MOBILE AND WIRELESS COMPUTING

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Attempt question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Explain the difference between the following terms:

- (i) “Access Point” and “Base Station”
 - (ii) “Wireless Computing” and “Mobility Computing”
 - (iii) “Ultra wideband” and “RF Id”
 - (iv) “GPRS” and “EDGE”
 - (v) “Short Message Service (SMS)” and “Unstructured Supplementary Services Data (USSD)”
- (20 marks)**

- b) Cellular networks have evolved through several generations. Outline key characteristics of each of each the first FIVE generations. **(10 marks)**

Question Two

- a) Explain the following types wireless networks:
(i) Wireless Personal Area Networks (WPAN)
(ii) Wireless Body Area Networks (WBAN) **(4 marks)**
- b) To avoid interference and collisions in wireless systems, channel users need special mechanisms for these purposes. Using appropriate diagrams. Explain the following Multiple Access Techniques:
(i) Frequency Division Multiple Access (FDMA)
(ii) Time Division Multiple Access (TDMA)
(iii) Code Division Multiple Access (DMA) **(16 marks)**

Question Three

- a) Java Micro Edition (Java ME) has two possible configurations. Explain:
(i) Connected Limited Device Configuration (CLDC) **(4 marks)**
(ii) Connected Device Configuration (CDC) **(4 marks)**
(iii) "MIDLET" **(2 marks)**
- b) Write a JavaME application that includes a Form and a Ticker on top of it. The ticker should include the rolling text:
"I LOVE JavaME programming" **(10 marks)**
- c) Explain any FOUR challenges that face cellular networks. **(4 marks)**

Question Four

- d) Wireless waves after leaving an antenna are propagated through the air using group-wave, sky wave or line-of-light.
Using appropriate diagrams, describe these wave propagation modes. **(12 marks)**
- e) Varieties of techniques are used to keep track of the users as they move from one cell to another. In the context of this statement, explain the term:
(i) Cell
(ii) Base transceiver station
(iii) Roaming
(iv) Handoff **(8 marks)**

Question Five

- a) Explain the following terms:
(i) Cognitive Radio
(ii) Smart Antenna
(iii) Near Field Communication **(6 marks)**
- b) Describe the various protocols of Wireless Application Protocol (WAP) stack. **(10 marks)**
- c) Wireless networks can be classified according to the type of wire being replaced. Explain the most appropriate technologies used in:

- (i) Fixed wireless
- (ii) Connecting electronic devices
- (iii) Phone lines
- (iv) Ethernet and LANS

(4 marks)