



TECHNICAL UNIVERISTY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR BACHELOR OF TECHNOLOGY IN  
INFORMATION COMMUNICATION TECHNOLOGY  
(BTICT M11/EV)

**EIT 4402: MOBILE & WIRELESS COMPUTING**

END OF SEMESTER EXAMINATION

**SERIES: APRIL 2013**

**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** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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**Question One (Compulsory)**

- a) Explain the difference between the following terms:
- (i) “Wireless” and “Mobility”
  - (ii) “Home Location Register” and “Visitor Location Register”
  - (iii) “Base Transceivers Station” and “Mobile Switching Center” (12 marks)
- b) State any **FIVE** drivers of wireless systems (5 marks)
- c) Explain the following terms:
- (i) Short message service (5 marks)
  - (ii) Unstructured supplementary services data (USSD)
  - (iii) General Packet Radio Services (GPRS)
  - (iv) Hotspot
  - (v) Handoff
  - (vi) Cell (6 marks)

- d) List any **FOUR** techniques used in the management of mobile users. **(4 marks)**
- e) State any **THREE** data transmission errors. **(3 marks)**

### Question Three

- a) Mobile computing and wireless communication networks are playing an increasingly important role in our professional and personal lives.
- (i) Explain any **FOUR** strengths of wireless systems that are driving their growth. **(8 marks)**
- (ii) Explain any **FOUR** limitation weakness of wireless systems. **(8 marks)**
- b) Explain the following common air protocols:
- (i) Advance Mobile Phone Service (AMPS)
- (ii) Interim Standard (IS) – 136
- (iii) Wideband code Division Multiple Access (WCDMA)
- (iv) Enhanced Data rates for GSM evolution (EDGE) **(4 marks)**

### Question Four

- a) In wireless systems, the users of channels need special mechanisms to avoid interference and collisions. Using suitable diagrams, explain the following mechanism commonly used:
- (i) Frequency Division Multiple Access (FDMA)
- (ii) Time Division Multiple Access (TDMA)
- (iii) Division Multiple Access (CDMA) **(9 marks)**
- b) Explain any **FIVE** advantages of CDMA over TDMA **(10 marks)**
- c) State **ONE** major challenge facing cellular networks transmission. **(1 mark)**

### Question Five

- a) Explain the term “Error Correction Code” as used in wireless transmission. **(2 marks)**
- b) State any **TWO** approaches used in error detection. **(2 marks)**
- c) Explain the application of GPRS in:
- (i) Chat
- (ii) Home automation
- (iii) Web browsing
- (iv) Multimedia **(4 marks)**
- d) Explain the following terms as used JavaME programming for mobile devices:
- (i) Connected Limited Device Configuration (CLDC)
- (ii) Connected Device Configuration (CDC) **(4 marks)**
- e) Write a simple JavaME application that includes a Form and Ticker on top of it. The ticker should include the following rolling text: “I Love JavaME” **(8 marks)**