



# TECHNICAL UNIVERSITY OF MOMBASA

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Select Faculty/School/Institute

Select department

## UNIVERSITY EXAMINATION FOR:

BSC I.T

BIT 2318: INFORMATION SYSTEM AUDIT

SPECIAL SUPPLEMENTARY EXAMINATION

**SERIES: APRIL 2017**

**TIME: 2 HOURS**

**DATE: 10 Sep 2017**

### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

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### Question ONE

- a) Discuss any three issues that should be considered by a system auditor at post implementation review stage before preparing the audit report. (6 Marks )
- b) Explain the following terms with reference to Information Systems Audit (4 Marks)
- (i) Risk
  - (ii) Threat
  - iii) Vulnerability
  - (iv) Exposure
- b) As an information system auditor explain how you can use the COBIT framework as a guide when auditing an organisation. (4 Marks )
- ii) Discuss any three areas that are to be explored to determine risks in IT Company. (6 Marks )
- c) State and explain four commonly used techniques to assess and evaluate risks in an enterprise. (8 Marks )
- d) Suggest any two procedural plans for disaster recovery. (2 Marks )

## Question TWO

Q2

a) Lovely Solutions has recently developed a core banking application software for the Real Bank Limited (RBL) which has more than sixty branches. One of the main distinguishing features of the new system is that it is able to provide online connectivity to all branches. Prior to implementing the application, management of RBL wants to know the measures taken by the Lovely Solutions for ensuring the availability of the system when multiple users will access it simultaneously. The management is also concerned about the change over strategies that can be adopted for replacing the existing system and the associated risks which may be faced during change over process.

i) Identify tests performed by Lovely Solutions to ensure that the system will remain available and its efficiency will not be compromised on account of simultaneous log in by a number of users. **(6 Marks)**

ii) List three major steps involved in change over from old to new system. **(3 Marks)**

iii) The risks which the management may face during the change over process. **(6 Marks)**

b) As an information system auditor explain how you can use the Certified Information Systems Auditor (CISA) framework as a guide when auditing an organisation. **(5 Marks)**

## Question THREE

Q3 The CEO of Pombe Securities & Exchange Company is concerned about the rising number of frauds being reported in the industry specially those carried out by insiders. Recently another financial institution in the same region had suffered a loss of Sh. 10 million due to a fraud which was committed by a senior executive who was responsible for carrying out a number of key responsibilities related to information systems. The CEO has requested you to advise the company on prevention and detection measures against such threats to their information systems.

i) Discuss the principle of tying duties to employees in relation to fraud **(10 Marks)**

ii) Suggest best practices for preventing and detecting frauds that may be committed by key information systems personnel. **(10 Marks)**

## Question FOUR

(a) The risk management process involves the identification and classification of assets and assessing the threats associated with the identified assets,

- i) identify four types of information assets associated with information technology  
**(4 Marks)**
- ii) Explain threats associated with each asset and The possible impact of the identified threats.  
**(16 Marks )**

### **Question FIVE**

a)After a recent security breach of information systems in Mamboleo Enterprises, an emergency meeting was called by Board of Directors of the company in which members of executive management, steering committee and chief information security officer also participated. Unfortunately, instead of finding the root cause of security breach and determining future course of action for managing various risks to which the organization may be exposed to, the meeting was marred by finger-pointing.

- i) List major steps for a ‘security incident handling and response’ mechanism in an organization.  
**(7 Marks)**
- ii) Identify at least **two** important responsibilities related to “Risk Management”, for each of the following:
  - a. Board of directors
  - b. Steering committee
  - c. Executive Management**(6Marks )**

- b) Explain audit tools and techniques used by a system auditor to ensure that disaster recovery plan is in order.  
**(7 Marks )**



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MATHEMATICS & PHYSICS

**UNIVERSITY EXAMINATION FOR:**

**BACHELOR OF SCIENCE IN STATISTICS & COMPUTER SCIENCE**

**EIT 4315: MULTIMEDIA SYSTEMS**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date Apr 2016**

## **Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

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## **Question ONE**

a) Explain the difference between the following terms:

i) Intra-object synchronization and Inter-object synchronization

ii) Hypertext and Hypermedia

iii) Virtual reality and virtual environment

(12 Marks)

b) State any four technological advancements that are driving multimedia revolution.

(4 Marks)

c) Explain the difference between the following terms:

i) "Lossy compression" and "Lossless compression" techniques

ii) "JPEG" and "MPEG" standards

(8 Marks)

d) Explain the following terms:

i) Multimedia

ii) Multimedia Information system

iii) Virtual Reality Modelling Language (VRML)

(6 Marks)

### Question TWO

- a) Describe the Term “Video Conferencing” (2 marks)
- b) Explain the term software and describe the different feature of the different classes of Software used in Multimedia systems (8 marks)
- c) What do you understand by Psychoacoustics (4 marks)
- d) Explain the desirable features of a Multimedia Systems (6 marks)

### Question THREE

- a) Give a concise definition of multimedia (2 marks)
- b) Explain the difference between the types of multimedia hardware systems you have studied (8 marks)
- c) Explain the benefits and challenges of using color in multimedia systems (4marks)
- d) List and explain at least 3 Functions of the Asynchronous Transfer Mode (ATM) (6 marks)

### Question FOUR

a) Explain the role of multimedia in the following areas:

- i) Entertainment and Fine Arts
- ii) Education
- iii) Industry
- iv) Medicine

(8 Marks)

b) Describe any four types of media used in a multimedia application, stating an example of a suitable application software in each case. (12 Marks)

### Question FIVE

- a) Describe the concept of Authoring System and Identify 4 main types of an Authoring tool (10 marks)
- b) Give a concise definition of Quality of Service (QoS) and explain the relevance of QoS in Multimedia Technology (10 marks)



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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MATHEMATICS & PHYSICS

**UNIVERSITY EXAMINATION FOR:**

**BACHELOR OF SCIENCE IN STATISTICS & COMPUTER SCIENCE**

**EIT 4315 : MULTIMEDIA SYSTEMS**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date Apr 2016**

## Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

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## Question ONE

- a) List and explain the types of multimedia systems (4 marks)
- a) Explain the desirable features of a Multimedia Systems (6 marks)
- b) Distinguish between the digital audio and analogue audio (4 marks)
- c) State at least 3 examples of a Multimedia Application (6 marks)
- a) Give a concise definition of multimedia (2 marks)
- d) Explain the Advantages and disadvantages of the Internet Telephony (6 marks).

## Question TWO

- a) What is a multimedia application (2 marks)
- b) Explain the term software and describe the different feature of the different classes of Software used in Multimedia systems (8 marks)
- c) Explain the term Digital subscriberline (4 marks)
- d) List and describe the different aspects of multicasting (6 marks)

## Question THREE

- a) Define Multimedia Compression and explain the application areas of Multimedia Compression (6 marks)
- b) Distinguish between the VoIP and the Internet Telephony (4 marks)
- c) Describe the concept of Authoring System and Identify 4 main types of an Authoring tool? (10 marks)

#### **Question FOUR**

- a) Explain the difference between the types of multimedia hardware systems you have studied (8 marks)
- b) List and explain at least 4 ways to create a digital image (8 marks)
- c) Explain the concept of Super nodes in Internet Telephony (4 marks)

#### **Question FIVE**

- a) What is multicasting (2 marks)
- b) Give a concise definition of Quality of Service (QoS) and explain the relevance of QoS in Multimedia Technology (10 marks)
- c) List and explain at least 4 ways to create a digital image (8 marks)



# TECHNICAL UNIVERSITY OF MOMBASA

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## INSTITUTE OF COMPUTING AND INFORMATICS

### UNIVERSITY EXAMINATION FOR:

#### BACHELOR OF TECHNOLOGY IN INFORMATION COMMUNICATION TECHNOLOGY

EIT 4304: COMPUTER ARCHITECTURE AND ORGNIZATION

END OF SEMESTER EXAMINATION

**SERIES: AUGUST2017**

**TIME:2HOURS**

**DATE:3Sep2017**

#### **Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptquestion ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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#### **Question ONE**

- a.) Different microprocessor architecture support various data size. Instruction set can be processes in various data size. Using relevant examples and with the aid of diagram, discuss the following data sizes:
- i. word (5 marks)
  - ii. long word (5 marks)
- b.) The registers in the processor perform two roles brief explain the roles. (4 marks)
- c.) An interrupt is a signal from some device or source seeking the attention of the processor. Discuss the different types of interrupts. (6 marks)
- d.) Using relevant examples discuss the following operations of a microprocessor



- i. Fetch Cycle (5 marks)
- ii. Execution Cycle (5 marks)

### Question TWO

- a.) A bus is shared communication link. It has a single set of wires used to connect multiple subsystems. Give two advantages and two disadvantages of buses. (5 marks)
  - i. advantage
  - ii. disadvantage
- b.) Buses are traditionally classified as one of 3 types. Discuss the following classification of buses.
  - i. Processor memory buses (5 marks)
  - ii. I/O buses (5 marks)
  - iii. Backplane buses (5 marks)

### Question THREE

- a.) Distinguished between the following microprocessor performance metric measurements:
  - i. MIPS (Million Instructions per Second) (5 marks)
  - ii. MHz (Millions of clock cycles per second) (5 marks)
- b.) Different microprocessor architecture support various data size. Instruction set can be processes in various data size. Using relevant examples and with the aid of diagram, discuss the following data sizes
  - i. nibble (5 marks)
  - ii. byte (5 marks)

### Question FOUR

- a.) There are different ways to classify computers. One of the more widely used classifications, in use since 1966, is called Flynn's Taxonomy. Using relevant examples and with aid of diagram discuss the following classification of computers:
  - i. SISD Computer Architecture (5 marks)
  - ii. SIMD Computer Architecture (5 marks)

- iii. MISD Computer Architecture (5 marks)
- iv. MIMD Computer Architecture (5 marks)

**Question FIVE**

A computer's instructions and their formats are known as its Instruction Set Architecture (ISA). The instruction is the fundamental unit of work. It is specified two things; the opcode: operation to be performed and operands: data/locations to be used for operation. An instruction is encoded as a sequence of bits, which might have fixed length such as 16 or 32 bits. Using relevant examples describe the following instruction processes of a computer:

- i. Fetch Instruction from memory (4 marks)
- ii. Decode Instruction (4 marks)
- iii. Evaluation Address (4 marks)
- iv. Execute Operation (4 marks)
- v. Store Results (4 marks)



# TECHNICAL UNIVERSITY OF MOMBASA

## INSTITUTE OF COMPUTING AND INFORMATICS

### DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

#### UNIVERSITY EXAMINATION FOR:

#### BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

#### EIT 4422: EMBEDDED SYSTEM

#### END OF SEMESTER EXAMINATION

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date Apr 2016**

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

#### Question ONE

- Define the following terms as used in Embedded systems (4 marks)
  - Microprocessor
  - Microcontroller
- Describe briefly the advantages both technical and commercial of using an RTOS (4 marks)
- Define an embedded systems and explain its contents (8 marks)
- With suitable examples explain the various application areas of embedded systems (8 marks)
- With a diagrammatic example describe the Embedded system model (6 marks)

#### Question TWO

- When approaching embedded systems architecture design from a systems engineering point of view, several models can be applied to describe the cycle of embedded system design. Briefly describe the four most common models (8 marks)
- What are Interrupts Handler and why are they important to embedded systems (6 marks)
- An architectural systems engineering approach to embedded systems is one of the most powerful tools that can be used to understand an embedded systems design or to resolve challenges faced when designing a new system, what are the most commonly faced challenges in design (6 marks)

### Question THREE

- a. Explain the classification of an embedded system with suitable examples (10 marks)
- b. In details describe the architectural design of an embedded system (10 marks)

### Question FOUR

- a. Most Embedded systems need to engage in multitasking and to do this they sometimes make use of a Real Time Operating System (RTOS). In the context of an RTOS, explain the following terms using diagrams if appropriate (10 marks)
- Task
  - Priority
  - Clock tick
  - Pipelining scheduling
- b. What is the Embedded Systems Design and Development Lifecycle Model explain this concept with a diagrammatic illustration (10 marks)

### Question FIVE

- a. Explain the Characteristics of embedded system (10 marks)
- b. In relation to embeds systems explain the following terms (10 marks)
- Module
  - Component and Connector
  - Allocation



# TECHNICAL UNIVERSITY OF MOMBASA

## INSTITUTE OF COMPUTING AND INFORMATICS

### DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

#### UNIVERSITY EXAMINATION FOR:

#### BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

#### EIT 4422: EMBEDDED SYSTEMS

#### END OF SEMESTER EXAMINATION

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: Pick Date Apr 2016**

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

#### Question ONE

- When approaching embedded systems architecture design from a systems engineering point of view, several models can be applied to describe the cycle of embedded system design. Briefly describe the four most common models (8 marks)
- Describe briefly the advantages both technical and commercial of using an RTOS (4 marks)
- With suitable examples explain the various application areas of embedded systems (8 marks)
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  - Microprocessor
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#### Question TWO

- What are Interrupts Handler and why are they important to embedded systems (6 marks)
- Define an embedded systems and explain its contents (8 marks)
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### Question THREE

- a. Explain the Characteristics of embedded system (10 marks)
- b. Explain the classification of an embedded system with suitable examples (10 marks)

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- a. In relation to embeds systems explain the following terms (10 marks)
- Module
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  - Allocation
- b. What is the Embedded Systems Design and Development Lifecycle Model explain this concept with a diagrammatic illustration (10 marks)

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- Task
  - Priority
  - Clock tick
  - Pipelining scheduling



## TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**UNIVERSITY EXAMINATION FOR:**  
DIPLOMA IN BUILDING AND CIVIL ENGINEERING  
EBC 2107 BUILDING TECHNOLOGY I  
END OF SEMESTER EXAMINATION

**SERIES:** sept. 2017

**TIME:** 2 HOURS

**DATE:** ---JULY 2017

### Instructions to Candidates

You should have the following for this examination

- Answer Booklet, examination pass and student ID
- Drawing instruments.
- Scientific calculator

This paper consists of **FIVE** questions. Attempt any **THREE** questions

**Do not write on the question paper**

**Mobile Phones are NOT allowed inside the examination room**

### QUESTION ONE

- (a) Briefly describe the stages involved in building process (6 marks)
- (b) Briefly explain the FOUR items involved in site investigation (10 marks)
- (c) Using well labeled sketch explain strip of foundation (4 marks)

## **QUESTION TWO**

- (a) Sketch and label corner profile board indicating center line of wall, wall thickness, foundation and column width. **(8 marks)**
- (b) Briefly explain THREE functional requirements of walls. **(6 marks)**
- (c) Briefly explain THREE ways in which dampness finds its way into building. **(6 marks)**

## **QUESTION THREE**

- a) State FIVE functional requirements of ground floors **(5 marks)**
- b) With the aid of a well labeled sketch describe the components of solid ground floor **(9 marks)**
- c) Briefly explain FOUR principles of designing flat roofs **(6 marks)**

## **QUESTION FOUR**

- (a) Briefly explain the following functional requirements of stairs
- (i) Strength and stability
  - (ii) Fire resistance
  - (iii) Sound insulation **(9 marks)**
- b) Sketch and label a stair flight **(6 marks)**
- c) Briefly describe the procedure of fixing a door **(5 marks)**

## **QUESTION FIVE**

- a) Sketch and label the following the following door furniture
- (i) Cylinder night latch
  - (ii) Mortise lock **(6 marks)**
- b) With the aid of a sketch, describe putlog scaffolding **(8 marks)**
- c) State the safety precaution for scaffolding **(6 marks)**





Technical University of Mombasa  
Institute of Computer Science and Informatics

DEPARTMENT OF COMPUTER SCIENCE

BIT 2123 Structured Programming

# Main Exam

End of Semester Exam

May 2016 Series

Time: 2 Hours

## Instructions to Candidates

- Question ONE is Compulsory
- Answer Any TWO Question in Section B
- Switch OFF mobile phones.

**Question One (30 Marks)**

- a) Define type conversation in C++ (2 Marks )
- b) Explain the difference between silent and explicit type conversion (4 Marks )
- c) Write a program that print a given number in reverse order (4 Marks )
- d) Explain the difference between structured programming and modular programming (4 Marks )
- e) Write a program to prompt the user to enter a number to be multiplied by 0 to 10 giving out results as follows  
 $N \times 0 = 0$   
 $N \times 1 = N$   
...  
 $N \times 10 = N0$  (6 Marks)
- f) Using an example illustrate the use of logical operator NOT ! (4 Marks)
- g) Explain three common error in programming and give remedies to mitigate the errors (6 Marks )

**Question Two (20 Marks)**

- a) Define the following
  - i. Structures
  - ii. Pre-processor directives
  - iii. typedef (6 Marks )
- b) Using Structures develop a program for processing admission report, the following are elements representing information

Roll Number	Name	Date of Birth	Course

(10 Marks)

- c) List and explain any four qualities of a good program (4 Marks )

**Question Three (20 Marks)**

- a) Explain how arrays simplify programming by use of a suitable example (4 Marks)
- b) List four characteristics of arrays (4 Marks)
- c) Develop a program using arrays to input items N sold in a shop and calculate the total sales (6 Marks )

d) Develop a program that input three numbers and evaluate the maximum and minimum number among the three.

(6 Marks)

**Question Four (20 Marks)**

a) Differentiate the following

- (i) Pass-by-value and pass-by-reference
- (ii) Function call and function prototype

(8 Marks)

b) Documentation is an essential practise in programming, list threeadvantages of documentation to management.

(3 Marks)

c) List three factors to consider when developing user program interface

(3 Marks)

d) Write an inline function to find Min number of two numbers (6 Marks )

**Question Five (20 Marks)**

a) Write a program to out put the total sum and total sum of squares of even numbers from 10 to N

( 6 Marks )

b) Write expressions to represent the following:

- i. p is a function whose argument is a pointer to an array of characters and which returns a pointer to an integer.
- ii. p is a function whose argument is a pointer to character and which returns a pointer to an array of ten integers.

(6 Marks)

c) Explain the following terms

- a. Class
- b. Unary
- c. Object

(6 Marks)





# TECHNICAL UNIVERSITY OF MOMBASA

## INSTITUTE OF COMPUTING AND INFORMATICS

### DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

#### UNIVERSITY EXAMINATION FOR:

#### BACHELOR OF SCIENCE IN MATHEMATICS AND COMPUTER

#### SCIENCE//BTIT2016/BSIT/2016 YEAR 1 SEMESTER 2

#### BACHELOR OF SCIENCE IN STATISTICS AND COMPUTER SCIENCE

#### YEAR 1 SEMESTER 2

#### EIT 4109 : OPERATING SYSTEMS

#### END OF SEMESTER EXAMINATION

#### SERIES:AUGUST2017

#### TIME:2HOURS

#### DATE:Pick DateSep2017

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

#### QUESTION 1 (30 MARKS)

- a) Describe three components of an Operating System that enable it provide a platform for communication between the user and hardware. [6 Marks]
- b) Define the following terms:
  - i. Process [1 mark]
  - ii. Interrupt [1 mark]
  - iii. Kernel [1 mark]
- c) Depict and briefly discuss the fetch-execute cycle. [3 Marks]
- d) Describe three components of a process control block (PCB). [3 Marks]
- e) Describe three Kernel-mode components of windows. [3 Marks]
- f) Briefly discuss the following terms

- i. Semaphore [2 marks]
- ii. Condition variable [2 marks]
- iii. Spinlocks [2 marks]
- g) Describe TWO operations that can be performed on a semaphore [4 Marks]
- h) Discuss how process control systems can be characterized [5 Marks]

**QUESTION 2 (20 MARKS)**

- a) Identify and explain four tables maintained by the operating system for a process in execution [8 Marks]
- b) Discuss two file access strategies used by the operating system [4 Marks]
- c) Different strategies are used to allocate space to processes competing for memory. Discuss the three of most popular strategies [8 Marks]

**QUESTION 3 (20 MARKS)**

- a) Describe the functions of the OS with respect to:
  - i. Memory management [4 marks]
  - ii. Device management [4 marks]
  - iii. Processor management [4 marks]
- b) Explain the four main strategies for handling deadlocks [8 marks]

**QUESTION 4 (20 MARKS)**

- a) Discuss the following terms in context of operating systems:
  - i. Paging [2 marks]
  - ii. Overlay [2 marks]
  - iii. Swapping [2 marks]
- b) Discuss Context Switching as used in operating systems [4 Marks]
- c) There are various situations by which a context switch needs to occur. Explain any three ways [4 Marks]
- d) Discuss the three memory placement algorithms used in Dynamic Partitioning. [6 marks]

**QUESTION 5 (20 Marks)**

- a) Explain the four main characteristics of an operating system strategy. [8 Marks]
- b) Outline the steps used in facilitating Remote Procedure Calls (RPC) between a server and a client. [10 Marks]
- c) Differentiate a Monolithic kernel and Microkernel [2 Marks]



Technical University of Mombasa  
Institute of Computer Science and Informatics

DEPARTMENT OF COMPUTER SCIENCE

ICS2202/EIT4109 OPERATING SYSTEM

# Main Exam

## End of Semester Exam

May 2016 Series

Time: 2 Hours

### Instructions to Candidates

- Question ONE is Compulsory
- Answer Any TWO Question in Section B
- Switch OFF mobile phones.

### Question One (30 Marks)

- a) Explain three main purposes of an operating system (6 Marks)
- b) Differentiate between operating systems for mainframe computers and personal computers' (4 Marks)
- c) Explain probable challenge a programmer overcome in writing an operating system for a real-time environment? (4 Marks)
- d) Explain difference between kernel mode and user mode function as a basic form of protecting/securing systems (4 Marks)
- e) List down different system calls for performing different kinds of tasks. (4Marks)
- f) Differentiate between pre-emptive and non-pre-emptive scheduling. (4 Marks)
- g) Explain the following terms as used in Operating system
  - a. Semaphore
  - b. Input/output bound (4 Marks)

### Question Two (20 Marks)

- a) Define swapping (1 Marks)
- b) Justify that swapping increases Operating Systems' overheads (3 Marks)
- c) Given memory partitions of 100k, 500k, 200k, 300k, and 600k (in order), apply first fit and best fit algorithms to place processes with the space requirement of 212k, 417k, 112k and 426k (in order)? Which algorithm makes the most effective use of memory? (6 Marks)
- d)
  - i. List the steps needed to perform page replacement.
  - ii. Explain the different page replacement policies.
  - iii. List main requirements, which should be satisfied by a page replacement policy. (10 Marks)

### Question Three (20 Marks)

- a) Define thread as used in operating system. (2 Marks)
- b) Describe the contents of a Process Control Block (PCB). (6 Marks)
- c) Define deadlock and explain the necessary conditions for deadlock occurrence. (6 Marks)



- d) Consider the following set of jobs with their arrival times, execution time (in minutes), and deadlines.

Calculate the mean turn-around time, the mean weighted turn-around time and the throughput for FCFS, SJN and deadline scheduling algorithms.

(8 Marks)

Job Ids	Arrival Time	Execution time	Deadline
1	0	5	5
2	1	15	25
3	3	12	10
4	7	25	50
5	10	5	12

#### Question Four (20 Marks)

- a) Define I/O buffer? (2 Marks)  
i. Explain the advantage and effectiveness of buffering (4 Marks)
- b) Explain the critical section problem with an example (3 Marks)
- c) Explain race condition (2 Marks)
- d) Differentiate between protection and security and techniques used for protecting user files. (9 Marks)

#### Question Five (20 Marks)

- a) Define inter process communication? (2 Marks)  
i. Explain the two fundamental models of inter process communication. (6Marks)
- b) Explain interrupts as used in process management? (2 Marks)  
i. How are they handled by the operating system (2 Marks)
- c) List the major activities of an operating system with respect to memory management, secondary storage management and process management. (8 Marks)





Technical University of Mombasa

Institute of Computer Science and Informatics

DEPARTMENT OF COMPUTER SCIENCE

ICS2202/EIT4109 OPERATING SYSTEM

Special/Supplementary exam

# End of Semester Exam

May 2016 Series

Time: 2 Hours

## Instructions to Candidates

- Question ONE is Compulsory
- Answer Any TWO Question in Section B
- Switch OFF mobile phones.

## Question One (30 Marks)

### Question 1

- a) Explain the following terms:-
- i. CPU utilization.
  - ii. Throughput.
  - iii. Response time. (6 Marks)
- b) State **three** activities in which Operating System is responsible in connection with memory management. (3 Marks)
- c) State any **five** content maintained by the process control block. (5 Marks)
- d) Differentiate between the following
- a. Device drivers and device controllers.
  - b. Pre-emptive and non-preemptive (6 Marks)
- e) The following jobs arrive according to the time shown below.

Job	AT	CPU Burst
A	0	30
B	2	25
C	4	12
D	6	16

- f) Construct a Gantt chart for FCFS and work out the Average waiting Time (AWT) and Average Turn Around Time (ATAT). (10 Marks)

## Question Two (20 Marks)

- a) The development of operating systems can be seen to be closely associated with the development of computer hardware. Describe the main developments of operating systems that occurred at each computer generation. **(8 Marks)**
- b) With the help of a diagram, give a detailed explanation of the process cycle. Explain the reasons a process will have to move from one state to the other. **(12 Marks)**

**Question Three (20 Marks)**

- a. Differentiate between preemptive and non-preemptive scheduling. (4 Marks)
- b. Given the following

<u>Process</u>	<u>Burst Time</u>
$P_1$	53
$P_2$	17
$P_3$	68
$P_4$	24

- Calculate the average wait time using the Round robin and FIFO scheduling algorithms Assume that a quantum of 20 is being used. **(10 Marks)**
- c. Explain three memory loading approaches. **(6 Marks)**

**Question Four (20 Marks)**

- a. Explain Four Conditions for Deadlock **(8 Marks)**
- b. Describe two file system implementations that use linked lists. Describe the advantages and disadvantages of each method. **(12 Marks)**

**Question Five (20 Marks)**

- a. Explain the Banker's algorithm for deadlock avoidance. **(5 Marks)**
- b. Explain various file attributes and file operations in brief. **(5 Marks)**
- d. Explain swapping in memory management. **(5 Marks)**
- e. Explain the Least Recently Used (LRU) Algorithm **(5 Marks)**





## TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF BUILDING & CIVIL ENGINEERING

### UNIVERSITY EXAMINATION FOR:

- DIPLOMA IN BUILDING AND CIVIL ENGINEERING
  - DIPLOMA IN QUANTITY SURVEYING
  - - DIPLOMA IN ARCHITECTURE

ECV2101 : CIVIL ENGINEERING MATERIALS

END OF SEMESTER EXAMINATION

**SERIES:** JULY 2017

**TIME:** 2 HOURS

**DATE:** .... JULY 2017

#### Instructions to Candidates

You should have the following for this examination

- Answer Booklet, examination pass and student ID
- Drawing instruments.
- Scientific calculator

-This paper consists of **FIVE** questions. Attempt any **THREE** questions.

- This paper consists of **THREE** printed pages

**Do not write on the question paper.**

**Mobile phones are not allowed in the examination room.**

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#### QUESTION ONE

(a) Describe **THREE** causes of deterioration of stones. (6 Marks)

(b) Briefly describe the geological classification of rocks (9 Marks)

(c) State **FIVE** properties that you would consider when choosing a building stone (5 Marks)

## QUESTION TWO

- (a) Outline FOUR requirements of good preservative for timber. (4 Marks)
- (b) Sketch TWO seasoning defects of timber. (6Marks)
- (c) i) Explain the meaning of the term “ conversion of timber”  
ii) With the aid of sketches, illustrate TWO methods of converting timber (8 Marks)
- d) Outline TWO uses of timber in the construction industry (2Marks)

## QUESTION THREE

- (a) Briefly describe the procedure for manufacture of clay products (8 Marks)
- (b) Explain the reason for drying bricks before burning (2 Marks)
- (c) i) Differentiate between ferrous and non-ferrous metals  
ii) Give FOUR examples of each type of metal in c i) (6 Marks)
- d) Define the following terms as used in describing properties of metals;  
i. Ductility  
ii. Malleability (4 Marks)

## QUESTION FOUR

- (a) Explain the meaning of the term “heat treatment “of steel (4 Marks)
- (b) Briefly describe the TWO main types of plastics (5 Marks)
- (c) State FIVE properties of bitumen. (5 Marks)



(c) Explain the meaning of “gauged lime plasters”.

(6 Marks)

**QUESTION FIVE**

(a). Outline FOUR properties of glass.

(4 Marks)

(b) Describe the following processes of fabricating of glass:

(i) Blowing

(ii) Flat drawing

(6Marks)

(c) State FOUR reasons for painting

(4 Marks)

d) Outline the THREE painting systems

(6 Marks)



# TECHNICAL UNIVERSITY OF MOMBASA

## INSTITUTE OF COMPUTING AND INFORMATICS

### DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

#### UNIVERSITY EXAMINATION FOR:

#### BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC

#### ENGINEERING YEAR 3 SEMESTER 2

#### SMA 2276: COMPUTER PROGRAMMING II

#### END OF SEMESTER EXAMINATION

**SERIES: AUGUST 2017**

**TIME: 2 HOURS**

**DATE: Pick Date Sep**

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

#### Question ONE (30 marks)

- a) Discuss the importance of the following in a C++ code
  - i. Main() (1 mark)
  - ii. Using namespace (1 mark)
  - iii. #include<iostream> (1 mark)
- b) Why is it important to write a **data type** in front of a variable? (1 mark)
- c) Using an example explain an inline function (4 marks)
- d) Classes are an important concept in object oriented programming. Discuss their use and how they are declared (4 marks)
- e) Discuss the three types of loop structures and the syntax of how they are declared? (6 marks)
- f) Discuss what an operator is giving FOUR classifications of operators (5 marks)
- g) Using an example discuss recursion (7 marks)

## Question TWO (20 marks)

- a) Explain the following terms
- i. Reference (1 mark)
  - ii. Constructor (1 mark)
  - iii. Derived Class (1 mark)
  - iv. Protected (1 mark)
  - v. Public (1 marks)
- b) Using an example explain what a multidimensional array (5 marks)
- c) Differentiate using examples between passing by reference using pointers and using references. (10 marks)

## Question THREE (20 marks)

- a) What is polymorphism? Give two examples (4 marks)
- b) Discuss the relationship between a virtual function and an abstract class. (2 marks)
- c) Differentiate between overloading and overriding (4 marks)
- d) Write a program that demonstrates what a constructor and a destructor is using a class that has a constructor and destructor. When the object of this class is created two numbers should be passed. The modulus of the two numbers is calculated and the result displayed. (10 mark)

## Question FOUR (20 marks)

- a) Define the following terms:
- i. Compiler (1 mark)
  - ii. Encapsulation (1 mark)
  - iii. Data hiding (1 mark)
  - iv. Inheritance (1 mark)
  - v. Scope resolution Operator (1 mark)
- b) i) Kasuku Corporation has heard the benefits of using Object Oriented Language. They want you to create a program that will store their employee records. They want a class called Employee and its accessor functions. it will capture the following:
- Employee name
  - Employee Date of Employment
  - Employee Age (5 marks)
- ii) Create a class called Manger that inherits from Employee class and adds a variable called bonus. Also include its accessor methods (5 marks)
- iii) Write a driver (main) program that implements the classes above (5 marks)

## Question FIVE (20 marks)

- a) Using an example, explain when to use an inline function and a friend function (4 Marks)

- b) Compare the concepts of structures in 'C' and classes in 'C++' with the aid of suitable examples (4 Marks)
- c) Give two reasons to pass an object by reference (4 Marks)
- d) Write a C++ code to demonstrate the concept of using an array of objects to create an array of ten employees(reading their entire personal data: Name, age, empID, gender, address) (8 Marks)



# TECHNICAL UNIVERSITY OF MOMBASA

## FACULTY OF ENGINEERING AND TECHNOLOGY

Select department

### UNIVERSITY EXAMINATION FOR: BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BIT 2222: ICT and Society

END OF SEMESTER EXAMINATION

**SERIES:**Select series2016

**TIME:**2HOURS

**DATE:**Pick DateMay2016

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptquestion ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

#### Question ONE

- a) Explain the following terms: (10 Marks)
- Telecommuting
  - Privacy
  - Information Security
  - Computer Crime
  - Computer Viruses
- b) State any five advantages and three disadvantages of Information Communication Technology in society. (8 Marks)
- c) Describe the 3 main components of ICT (6 marks)
- d) State the two important principles of Optimum population (6 marks)

## **Question TWO**

- a) Discuss the four phases of the demographic theory and the characteristics of the population trends in each phase (12 marks)
- c) Describe any five economics impacts on the use of ICT in education (8 marks)

## **Question THREE**

- a) Demography is “the study of the size, territorial distribution, and composition of population, changes therein, and the components of such changes. Describe any three theories demography. (9 marks)
- b) Explain any four disadvantages of telecommuting (8 Marks)
- c) Give any three reasons why electronic monitoring of workers is necessary (3 Marks)

## **Question FOUR**

- a) The most devastating effect of employee surveillance is fear of losing their jobs. Discuss any six problems caused by electronic monitoring of workers. (12 Marks)
- b) State any four surveillance technologies used to monitor workers. (8 Marks)

## **Question FIVE**

- a) Explain any Five forms of speech found in cyberspace that are considered to be offensive. (5 Marks)
- b) Evaluate the role ICTs in regard to:
- (i) Luddites
  - (ii) Society
  - (iii) Internet culture (9 Marks)
- c) State any three reasons why a published material is considered to be obscene (6 Marks)



# TECHNICAL UNIVERSITY OF MOMBASA

## FACULTY OF ENGINEERING AND TECHNOLOGY

Select department

### UNIVERSITY EXAMINATION FOR: BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BIT 2222: ICT and Society

END OF SEMESTER EXAMINATION

**SERIES:** Select series 2016

**TIME:** 2 HOURS

**DATE:** Pick Date May 2016

#### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

#### Question ONE

a) Explain the following terms:

- i) Society
- ii) Security
- iii) Luddites
- iv) Computer Error
- v) Firewall

(10 marks)

b) State any four advantages and three disadvantages of Telecommuting

(14 marks)

c) State the two important principles of Optimum population theory

(6 marks)

## **Question TWO**

Discuss the four stages of the demographic theory, the characteristics of the population trends, level of technology and population growth in each phase (20 marks)

## **Question THREE**

Demography is “the study of the size, territorial distribution, and composition of population, changes therein, and the components of such changes. Discuss any four theories demography. (20 marks)

## **Question FOUR**

- a) State any six advantages and four disadvantages of Information Communication Technology in society. (10 marks)
- b) State any five surveillance technologies used to monitor workers. (10 marks)

## **Question FIVE**

- a) Give any Five forms of speech found in cyberspace that are considered to be offensive. (10 marks)
- d) State any five reasons why a published material is considered to be obscene (10 marks)





**TECHNICAL UNIVERSITY OF MOMBASA**  

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**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF MEDICAL ENGINEERING**  
**UNIVERSITY EXAMINATION FOR:**  
**BACHELOR OF SCIENCE IN MEDICAL ENGINEERING**  
**EIT 4150: INTRODUCTION TO IT**  
**END OF SEMESTER EXAMINATION**  
**SERIES:** Select series 2016  
**TIME:** 2 HOURS  
**DATE:** Pick Date May 2016

**Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other **TWO** questions.

**Do not write on the question paper.**

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**Question ONE**

- a) A computer is a system that comprises mainly hardware and software. It processes input data to get information as output. Define fully the following terms: (10 Marks)
- i) Operating systems
  - ii) Hardware
  - iii) Utility programs
  - iv) Device drivers
  - v) System Unit
- b) As a person with knowledge about application software, and assuming that you have been called to advice on the same. Explain four factors that the business should consider so as to buy the most appropriate application packages. (8 Marks)
- c) An Operating System is a set of programs that controls functioning of computer hardware. Explain any four functions of an Operating System of a computer (8 marks)
- d) Explain **two** main uses of a UPS in a computer laboratory. (4 Marks)

## Question TWO

- a) Distinguish between warm booting and cold booting. (4 marks)
- b) What are the benefits of buying ready - software from internet? (4 Marks)
- c) How will you differentiate System Software from Application Software in order for the management to buy the right software (4 Marks)

## Question THREE

- a) Explain the major components of the Central Processing Unit (10 Marks)
- b) A Student has bought a computer for use at home. An integrated software package was supplied along with the computer. The integrated package had Word Processing, Database, Spreadsheets and Art modules.
- i) State the purpose of each module the student may use it for. (4 Marks)
  - ii) Give two advantages of an integrated package over each separate module. (4 Marks)
  - iii) Name two keys on the computer keyboard that the student may use to erase text. (2 Marks)

## Question FOUR

- a) Highlight two advantages that a firm realized from the use of Project Management Software. (4 Marks)
- b) For each of the first four computer generations, identify the major electronic component and any other one characteristic.

(16 Marks)

## Question FIVE

Computer can be classified according to Size and Technology. Describe each classification, highlighting the subcategories. (20 Marks)



**TECHNICAL UNIVERSITY OF MOMBASA**  

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**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF MEDICAL ENGINEERING**  
**UNIVERSITY EXAMINATION FOR:**  
**BACHELOR OF SCIENCE IN MEDICAL ENGINEERING**  
**EIT 4150: INTRODUCTION TO IT**  
**END OF SEMESTER EXAMINATION**

**SERIES:** Select series 2016

**TIME:** 2 HOURS

**DATE:** Pick Date May 2016

**Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other **TWO** questions.

**Do not write on the question paper.**

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**Question ONE**

- a) A computer is a system that comprises mainly hardware and software. It processes input data to get information as output. Define fully the following terms: (16 Marks)
- i. "Firmware" and "software"
  - ii. "Input devices" and "Output devices"
  - iii. "Cache memory" and "Registers"
  - iv) "System software" and "Application software"
- b) As a person with knowledge about application software, and assuming that you have been called to advice on the same. Explain three factors that the business should consider so as to buy the most appropriate application packages. (6 Marks)
- c) An Operating System is a set of programs that controls functioning of computer hardware. Explain any four functions of an Operating System of a computer (8 marks)

**Question TWO**

- a) Explain any four components of an operating system (8 Marks)

b) During startup, a computer performs several routines. Discuss the following terms:

i) Power-On-Self-Test (POST)

ii) Cold boot

iii) Basic Input Output System (BIOS)

(12 Marks)

### **Question THREE**

a) Explain the term “Central Processing Unit”

(2 Marks)

b) Explain the major components of the Central Processing Unit

(10 Marks)

c) Explain how the Central Processing Unit uses the four steps of a machine cycle to process data.

(8 Marks)

### **Question FOUR**

For each of the five computer generations, identify the major electronic component and any other one characteristic.

(20 marks)

### **Question FIVE**

Computer can be classified according to Size and Technology. Describe each classification, highlighting the subcategories.

(20 Marks)