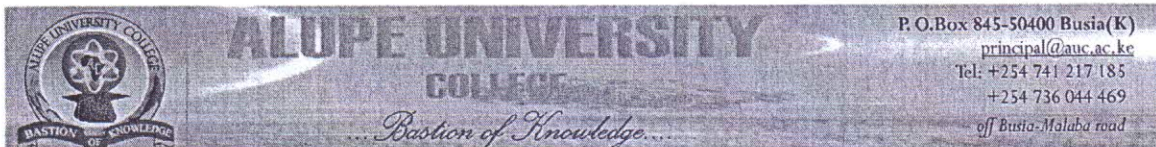


COM 223

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OFFICE OF THE DEPUTY PRINCIPAL  
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

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## UNIVERSITY EXAMINATIONS

### 2018 /2019 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER REGULAR  
EXAMINATION



**FOR THE DEGREE OF BACHELOR OF  
COMPUTER SCIENCE**

**COURSE CODE: COM 223**

**COURSE TITLE: OPERATING SYSTEMS AND  
NETWORKS**

**DATE: 17<sup>th</sup> April, 2019**

**TIME: 9.00 am – 12.00 pm**

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### INSTRUCTION TO CANDIDATES

- SEE INSIDE

**THIS PAPER CONSISTS OF 3 PRINTED PAGES**

**PLEASE TURN OVER**

**COM 223: OPERATING SYSTEMS AND NETWORKS**

**STREAM: BSc (Computer Science)**

**DURATION: 3 Hours**

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**INSTRUCTIONS TO CANDIDATES**

- i. Answer *ALL* questions from section A and any *THREE* from section B.
- ii. Maps and diagrams should be used whenever they serve to illustrate the answer.
- iii. Do not write on the question paper.

**SECTION A (24 MARKS) COMPULSORY**

**QUESTION ONE (12 Marks)**

- a) Describe the roles played by RJ45 and RJ11 in telecommunication (3 Marks)
- b) State three cost considerations that one needs to bear in mind while choosing a topology (3 marks)
- c) (i) With the help of a well-labelled diagram describe a Hybrid network (4 marks)  
(ii) State two internetworking devices that can be used on a hybrid network (2 Marks)

**QUESTION TWO (12 Marks)**

- a) Mention the most popular bus network standard and give two advantages associated with it (3 Marks)
- b) Describe how odd and even parity systems assist in error detection during data transmission (4 marks)
- c) Provide a brief description of how multiprogramming batch systems handle scheduling during instruction execution (5 Marks)

**SECTION B (36 Marks)**

**QUESTION THREE (12 Marks)**

- a) Given a situation where the incoming processes are short and there is no need for the processes to execute in a specific order. Identify the best scheduling algorithm for the above scenario, while at the same time providing an explanation for your choice (3 Mark)
- b) Describe the three types of addressing employed by the network layer (3 Marks)
- c) Outline the three functions of the session layer (3 Marks)

- d) Distinguish between message switching and packet switching (3 Marks)

**QUESTION FOUR (12 Marks)**

- (a) Discuss the negative issues associated with multithreading in operating systems (4 Marks)
- (b) With the help of well-labeled diagrams explain how frequency modulation differs from amplitude modulation (4 Marks)
- (c) Outline the four factors that a router using the Open shortest path first puts into consideration when calculating routes (4 Marks)

**QUESTION FIVE (12 Marks)**

- a) Analyse the three clustering techniques employed by clustering operating systems. (6 Marks)
- b) Explain the role played by the MAC sub layer and the LLC sub layer within the data link layer of the OSI reference model (6 marks)

**QUESTION SIX (12 Marks)**

- a) Briefly describe the roles of the 7 layers of the OSI model (7 Marks)
- b) Give five reasons why computer networks are prone to security attacks (5 Marks)

**QUESTION SEVEN (12 Marks)**

- a) (i) Using even parity error detection method give the parity bit of the following (3 Marks)
- 010111\_ ; 110010\_ and 111011\_.
- (ii) Give the main advantage and main disadvantage associated with of using parity check system in error detection (4 Marks)
- b) (i) Define the open system interconnection (2 Marks)
- (ii) Describe the purpose of layering the protocols in the OSI model (3 Marks)

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