



# UNIVERSITY OF KABIANGA

## UNIVERSITY EXAMINATIONS 2017/2018 ACADEMIC YEAR THIRD YEAR FIRST SEMESTER EXAMINATION

### FOR THE DEGREE IN BACHELOR OF INFORMATION SCIENCE AND KNOWLEDGE MANAGEMENT

**COURSE CODE: ISK 311**

**COURSE TITLE: COMPUTER NETWORKS**

**DATE: 5<sup>TH</sup> FEBRUARY, 2018**

**TIME: 9.00 A.M - 12.00 NOON**

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### **INSTRUCTIONS TO CANDIDATES**

- SEE INSIDE

THIS PAPER CONSISTS OF (4) PRINTED PAGES

PLEASE TURN OVER

TOWN CAMPUS

UNIVERSITY EXAMINATIONS 2017/2018

THIRD YEAR FIRST SEMESTER EXAMINATION

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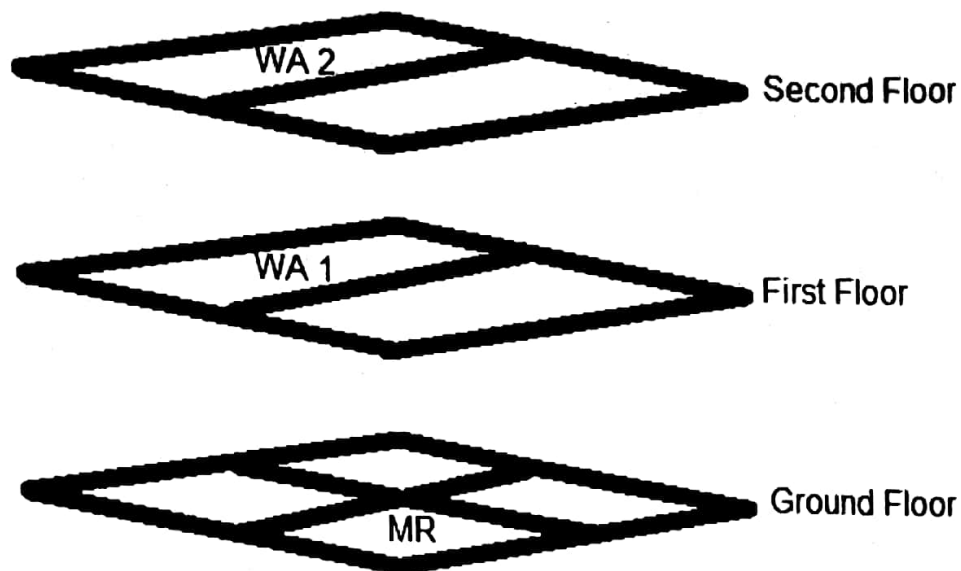
**Instructions:**

Answer QUESTION ONE and any other TWO Questions.

**QUESTION ONE**

**(30 marks)**

- a) Describe any FOUR network properties that may be used to distinguish among the various types of computer networks. **(4 marks)**
- b) Describe THREE characteristics that determine the effectiveness of a data communication system. **(6 marks)**
- c) Distinguish between the following pairs of terms as used in data communications and networks:
- i) Analogue Signal and Digital Signal
  - ii) Intranet and Internet
  - iii) Asynchronous and Synchronous transmission
  - iv) Packet and Frame. **(8 marks)**
- d) Study the diagram below. It shows a building with three floors – ground, first, and second. It has a machine room (MR) on the ground floor and other floors are work areas (WA 1 and WA 2):



Using diagrams and brief explanations, propose how you would install a modern LAN that covers all the floors without shifting the machine room. **(12 marks)**

**QUESTION TWO**

- a) Describe the components of a data communication system. **(8 marks)**
  
- b) You have been appointed to design a network for a neighbouring secondary school. The School has many buildings, all located within 5 acres of land. Describe any FOUR physical topologies that your design may assume, highlighting two merits and two demerits of each topology. **(12 marks)**

**QUESTION THREE**

- a) Describe the following transmission media:
  - i) Twisted pair cable **(4 marks)**
  - ii) Fibre optic cable **(4 marks)**
  
- b) Discuss any SIX factors that you would consider when choosing a network transmission medium. **(12 marks)**

#### **QUESTION FOUR**

a) Distinguish between the following pairs of terms as used in networking:

- i) Logical topology and Physical topology
- ii) Point-to-point connection and multipoint connection.

**(8 marks)**

b) Using your distinction in a(i) above as a basis, discuss any TWO logical topologies that may be implemented in modern networks.

**(12 marks)**

#### **QUESTION FIVE**

a)

- i) Distinguish between a "MAC address" and an "IP address".

**(4 marks)**

- ii) Describe the structure of an IP address.

**(4 marks)**

b) Discuss any FOUR classes of IP addresses.

**(12 marks)**

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