



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

THIRD YEAR FIRST SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF TECHNOLOGY
(BUILDING AND CONSTRUCTION)**

COURSE CODE: BTB 341

**COURSE TITLE: BUILDING SERVICES AND CONTROL
SYSTEMS**

DATE: FRIDAY 17TH JANUARY 2020 TIME: 3.00 – 5.00 PM

INSTRUCTIONS:

1. This paper contains FIVE questions
2. Answer question ONE (compulsory) and any other THREE question
3. Marks for each question are indicated in the parenthesis.
4. Examination duration is **2 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

SECTION A: Answer question 1 (Mandatory)**Question 1 (30 marks)**

(a) A modern twenty storey commercial building is proposed in Kakamega town and as the Building Services Engineer you are expected to quantify the various building services to be incorporated in the project. Tabulate the items to include and also state the various players you will assign jobs in order to achieve this. [10 marks]

(b) By use of suitable sketches differentiate between direct and indirect cold water service layout in a building. Give the advantages of each. [10 marks]

(c) State and explain FIVE categories of fire extinguishers mentioning the type of fires they are designed to combat. [10 marks]

SECTION B: Answer any TWO questions**Question 2 (20 marks)**

(a) Differentiate between a dry riser and wet riser. Provide a well labelled sketch of a wet riser installation in a building. [7 marks]

(b) Explain the term “Sick building syndrome” as applied in buildings. How is it prevented? [5 marks]

(c) By use of neat illustrations describe the following types of ventilation systems used in buildings: (i) Exhaust Ventilation system and (ii) Supply Ventilation system [8 marks]

Question 3 (20 marks)

(a) Define the term Energy Audit. When carrying out an energy audit on a commercial building, describe the typical energy improvement measures you could recommend and the justification for each measure described. [10 marks]

(b) By the use of a suitable sketch, illustrate the heat exchange processes which occurs between a building and the external environment. [5 marks]

(c) Outline the corrective measures that could be taken to minimize the impact of traffic noise in an existing building. [5 marks]

Question 4 (20 marks)

(a) Differentiate between a single-phase and three-phase power supply in a building. What are the benefits and application of each? [10 marks]

(b) Discuss the requirements of lifts installations in buildings. [5 marks]

(c) Explain the working of smoke detectors and heat detectors in buildings. [5 marks]