



(University of Choice)  
MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY  
(MMUST)

(MAIN CAMPUS)

UNIVERSITY EXAMINATIONS  
2023/2024 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER EXAMINATIONS

FOR THE BACHELOR OF SCIENCE  
IN  
EPIDEMIOLOGY AND BIOSTATISTICS

COURSE CODE: HEM 416

COURSE TITLE: SYSTEMATIC REVIEWS AND META ANALYSIS

DATE: 6/12/2023

TIME: 8.00-10.00 AM

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**INSTRUCTIONS:**

- This paper consists of Two (2) sections A, and B
- Each section has relevant instructions. Read the instructions specific for each section carefully, and answer the questions accordingly

MMUST observes ZERO tolerance to examination  
cheating

This Paper Consists of 3 Printed Pages. Please Turn Over

## SECTION A: SHORT ANSWER QUESTIONS (40 Marks)

### Instructions

- The section has a total of TEN (10) short answer questions (SAQs), carrying a maximum of forty (40) marks total.
- Answer all the questions
- Write your answers on the provided university examination booklet

1. Define the following terms as used in Systematic reviews and meta-analysis

i. PICO

ii. Review

iii. Systematic

Iv. Meta- analysis

2. Giving example, state four types of Cochrane Review used in Epidemiology  
4marks

3. Determine four tools used systematic epidemiological reviews. 4 marks

4. Reviewers encounter different challenges during data extraction. State at least eight problems  
4 marks

5. State relevant data to extract for a systematic review 4 marks

6. Identify any four types of review questions in systematic review 4 marks

7. Highlight five factors that influence the selection of a proper statistical model for meta-analysis  
4 marks

8. Identify the problems encountered in Meta-analysis 4 marks

9. Differentiate between a fixed-effect model and a random-effects model  
4 marks

10 Explain reason why is it important to examine the between-study heterogeneity of a meta-analysis  
4 marks

## SECTION B: LONG ANSWER QUESTIONS (30 Marks)

### Instructions

- The section has THREE (3) long answer questions (LAQs), totaling to a maximum of Thirty (30) marks
- Answer Any TWO questions
- Write your answers on the provided university examination booklet

11. Discuss the processes involved while conducting meta- analysis 15 marks

- i. key components of a forest plot
- ii. advantages of presenting a forest plot of our meta-analysis
- iii. characteristics mark a meta-regression model that fits our data well
- iv. Types of bias
- v. two questionable research practices (QRPs), and explain how they can threaten the validity of our meta-analysis

12. Evaluate the advantages and disadvantages of systematic reviews and meta-analysis in health research and development. 15 marks

13. Discuss the benefits individual patient's data Meta-analysis 15 marks

