



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

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**FIFTH YEAR FIRST SEMESTER
EXAMINATIONS
FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MECHANICAL
AND INDUSTRIAL ENGINEERING**

COURSE CODE: MIE 516E

COURSE TITLE: NANOTECHNOLOGY

DATE: 22/4/2022

TIME: 12.00-2.00PM

INSTRUCTIONS

Answer question **ONE** and any other **TWO** questions

TIME: 2 Hour

**MMUST observes ZERO tolerance to examination cheating.
This paper consists of 2 printed pages Please Turn Over →**

Question 1 (30 Marks)

- a) Describe salient features of nanomaterials (6 marks)
- b) State and briefly explain any TWO top down and THREE bottom Up methods of producing nanomaterials (10 Marks)
- c) Describe any Two characterization methods for nanomaterials (8 marks)
- d) Nature is the sole source of nanomaterials explain any THREE natural nanomaterials highlighting one artificial nanomaterials based on each (6 marks)

Question 2 (20 Marks)

- a) Privacy of an individual is a fundamental right. Nano materials are infringing these rights explain? (8 marks)
- b) Describe the challenges governments are facing in relation to nanomaterials (12marks)

Question 3 (20 Marks)

- a) There is enough room at the bottom explain. (4 marks)
- b) Describe one bottom up method of nano materials production. (6 marks)
- c) Nano materials have played a major role in the medical field, State the areas where nanotechnology has impacted (10mks)

Question 4 (20 Marks)

- a) Discuss the impact of nano- materials on averting environmental pollution (6 marks)
- b) Discuss areas of applications of nanomaterials to electronics and communications technology (14 marks)