



(University of Choice)

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

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2018/2019 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DIPLOMA

IN

WATER TECHNOLOGY

COURSE CODE: DWT 079

COURSE TITLE: DRILLING TECHNOLOGY

DATE: THURSDAY 7TH FEBRUARY 2019 TIME: 3.00PM – 5.00PM

INSTRUCTIONS:

- a) Answer Question **ONE** and any other **TWO** Questions
- b) Marks for each question are indicated in the parenthesis.
- c) Examination duration is **2 Hours**
- d) Use of Mobile phones is **NOT ALLOWED** in the examination room.

MMUST observes **ZERO** tolerance to examination cheating

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

QUESTION ONE – COMPULSORY (40 MARKS)

- a) Define the term drilling (1 Mark)
- b) State **four** advantages of ground water (4 Marks)
- c) Explain **five** factors to be considered in selecting a site for borehole drilling. (10 Marks)
- d) Briefly describe the following methods of drilling (25 Marks)
- i. Jetting
 - ii. Hand augering
 - iii. Sludging
 - iv. Percussion drilling
 - v. Rotary drilling

QUESTION TWO (15 MARKS)

- a) With the aid of diagram describe the following types of aquifers (9 Marks)
- i. Confined aquifer
 - ii. Unconfined aquifer
 - iii. Perched aquifer
- b) Explain **three** reasons why drilling fluids are used in borehole drilling operation (6 Marks)

QUESTION THREE (15 MARKS)

- a) State the advantages and disadvantages of the following drilling fluids (8 Marks)
- i. Bentonite
 - ii. Natural clay
- b) Discuss the importance of a drilling borehole log in the drilling industry (7 Marks)

QUESTION FOUR (15 MARKS)

- a) With the aid of a diagram name **five** tools that form the string of tools for a percussion rig. (5 Marks)
- b) Describe the following types of rotary drilling (10 Marks)
- i. Direct mud rotary drilling
 - ii. Reverse circulation mud rotary drilling