



**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

FOURTH YEAR SECOND SEMESTER MAIN EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF EDUCATION SCIENCE**

COURSE CODE: SPH 426

COURSE TITLE: ELECTROMAGNETIC THEORY

DATE: 31/08/2022

TIME: 9:00AM-11:00AM

INSTRUCTIONS TO CANDIDATES

TIME: 2 Hours

**Answer question ONE and any TWO of the remaining.
Symbols used bear the usual meaning.**

KIBU observes ZERO tolerance to examination cheating

Question One (30 marks)

- a) Describe the basic properties of charge (3 marks)

This paper consists of 3 Printed Pages. Please Turn Over.

Question Five (20 marks)

- a) A spherical shell of radius R , carrying a uniform surface charge σ , is set spinning at angular velocity ω . Find the vector potential it produces at a point r (10 marks)
- b) By using Maxwell's equations in regions of space where there is no charge or current and decoupling the equations by applying a Curl. Determine the wave equations for E and B (10 marks)