MTH 417 ELECTROMAGNETIC THEORY
TIME ALLOWED:

INSTRUCTIONS: Question one is compulsory, and answer any three questions.

1. State and explain each of the four Maxwell's equations.
20marks

2. a. State Gauss's divergence theorem and
8marks

  b. State Stokes theorem.
8marks

  c. Apply Gauss's divergence theorem to the first two of Maxwell's equations. Compare their resulting equations. 17mark

  d. Derive the wave equation for the electric field, using the third of Maxwell's equations and take the curl of

   both sides. 9marks

3. Derive the wave equation for the magnetic field. Using the last of Maxwell's equations, 8marks

  a. Determine whether light waves are longitudinal or transverse waves.
10marks

  b.   State the Lenz's law. 7marks

The total obtainable marks is 70 marks. Good Luck.