



MKEP 1543 Sem 1 2020/21

NAME: _____

TEST 1 DURATION: 1 HOUR (CLOSED BOOK) DATE: 31 DEC 2020

ANSWER ALL QUESTIONS. FOR DESCRIPTIVE QUESTIONS, ALWAYS TRY TO USE SUITABLY LABELLED DIAGRAMS TO ASSIST YOUR DESCRIPTION

1. **Briefly** compare and contrast finite difference and finite element techniques for electric field computation.

(5 marks)

2. **Briefly** explain how the principles behind underground cable PD mapping. In particular, show how the distances are computed.

(5 marks)

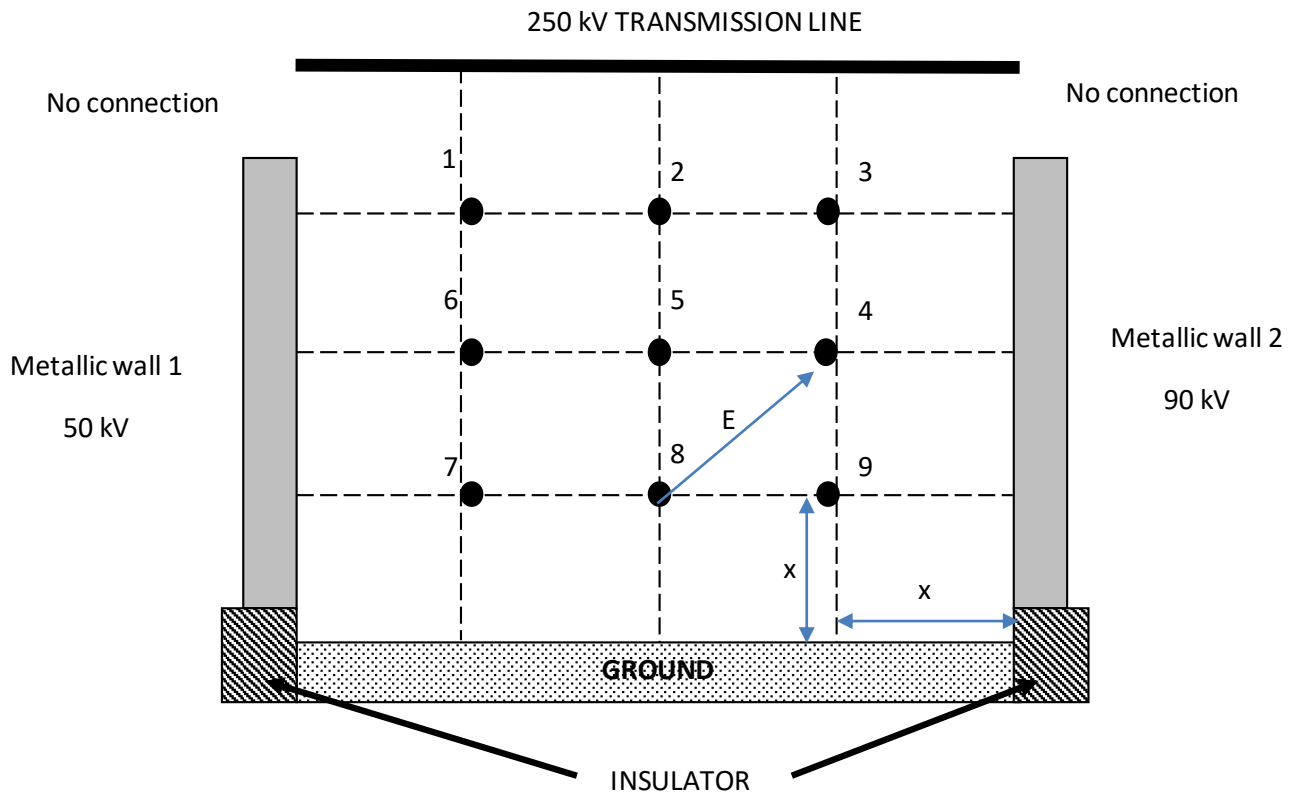
3. Tan delta measurements on a motor can be used as partial discharge monitoring technique. Briefly explain this statement.

(5 marks)

4. The acoustic technique using acoustic sensors can be used to locate a partial discharge site in an oil filled transformer. Explain this statement.

(5 marks)

5. If $x = 10$ cm, compute E after one iteration in the following diagram:



(10 marks)

6. A high voltage coupling capacitor can be used to measure individual PD signal in a laboratory experiment. Explain how the coupling capacitor work.

(5 marks)