



COLLEGE OF ENGINEERING, SCIENCE & TECHNOLOGY
SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING
CERTIFICATE IV IN ELECTRICAL ENGINEERING-STAGE 3
EEE395- ELECTRICAL INSTALLATION TECHNOLOGY A

FINAL EXAMINATION – PENSTER 3, 2015

TIME: 2HOURS 10MINUTES
ROOM: AS PER TIMETABLE

INSTRUCTIONS TO STUDENTS

- 1. You are allowed 10 minutes Extra reading time during which you are NOT to write.*
- 2. Begin each answer on a fresh page and use both sides of the sheet.*
- 3. Write your candidate-number at the top of each attached sheet*
- 4. Insert all written foolscaps, graph paper, drawing paper, etc. in their correct sequence and secure with string*
- 5. For all sheets of paper on which rough/draft work has been done, cross it though and you MUST ATTACH to your answer scripts.*
- 6. Write clearly the number(s) of the question(s) attempted on the top of each sheet.*
- 7. ANSWER ALL QUESTIONS.**
- 8. Show all workings where necessary.*
- 9. Do not use programmable calculators, especially the ones that do the conversions of number systems.*
- 10. ALWAYS CHECK YOUR WORK BEFORE YOU LEAVE THE ROOM!**

SECTION A

(60 MARKS)

ANSWER WITH APPROPRIATE RULE NUMBERS

1. Outline the procedure in steps (5) of erecting ladders.
(5marks)
2. List five factors that affect the design of an electrical installation.
(5marks)
3. Outline four advantages of a 3 phase system over a single phase system.
(4marks)
4. Draw a single line diagram and identify the following:
 - a. Consumer Mains (MSB)
 - b. Sub-mains (DSB)
 - c. Sub-circuit(LOAD)(6marks)
5. Name three sources of extra low voltage supplies.
(3marks)
6. Determine the minimum permissible cable size for V75 thermoplastic insulated copper conductors in PVC conduit used as the consumer's mains for single phase 240V domestic supply and protected by circuit breakers.

Voltage drop considerations may be neglected once the load consists of:

- 23 lighting point
- 4 x single 10A GPO's
- 4 x double 10A GPO's
- 2 x 15A socket outlet
- 1 x 1KW range
- 1 x 1KW Air Conditioner

(12marks)

7. There are many features that determine the particular type of cable to be selected for any purpose, state four environmental features that determine the type of cable to be selected.

(4marks)

8. List the names of four different types of power generating stations and the places they are located.

(6marks)

9. Outline the approved lockout/tagout procedure required for the safety of workers due to modern equipment hazards.

(6marks)

10. Discuss in detail the following with the various voltages available at each stage:

- a. Generation
- b. Transmission
- c. Distribution

(9marks)

SECTION B

(40 MARKS)

ANSWER WITH APPROPRIATE RULE NUMBERS

1. List four basic methods of protection recommended against direct contact with live parts of an electrical installation.

(4marks)

2. List three types of devices used for shutting down mechanical maintenance.

(3marks)

3. Define the following terms:

- Cable, sheated
- Enclosure
- Main earthing conductor

(3marks)

4. State two basic reasons for dividing every electrical installation into circuit arrangement.
(2marks)
5. Outline two situations where the pin-type insulators shall not be used for supporting aerial conductors.
(3marks)
6. List three types of protective devices that can be used for the protection against both overloaded and short-circuit currents.
(4marks)
7. List three basic causes of under voltage/ drop in voltage in an electrical installation.
(4marks)
8. Electrical circuits are logically divided into several categories, each in individual circuit or group of circuits. List three typical circuit groups of an electrical installation.
(4marks)
9. List any three types of wiring enclosures normally used in the electrical industry.
(4marks)
10. Outline three forms of copper earthing conductors required to be used for earthing.
(4marks)
11. What height above ground, floor or a suitable platform should a main switch should be located.
(2marks)
12. How should festoon lighting be located and supported.
(3marks)

END OF PAPER