



COLLEGE OF ENGINEERING, SCIENCE & TECHNOLOGY (CEST)

SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING

PROGRAMME: CERTIFICATE III IN ELECTRICAL ENGINEERING-STAGE 3

UNIT CODE: EEC334

UNIT TITLE: REGULATION AND STANDARDS

FINAL EXAMINATION – QUARTER 4, 2019

ROOM: AS PER TIMETABLE

TIME: 2 HOURS 10 MINUTES

INSTRUCTIONS TO STUDENTS

1. You are allowed **10 minutes** extra **reading time** during which you are **NOT** to write.
2. Begin each **SECTION** 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 a string.
5. For all sheets of paper on which rough/draft work has been done, cross it through and **ATTACH** these to your answer scripts.
6. Write clearly the number(s) of the question(s) attempted on the top of each sheet.
7. Show all working where necessary.
8. **AS/NZS 3000:2007 Wiring Rule Books** will be provided.
9. **ALWAYS CHECK YOUR WORK BEFORE YOU LEAVE THE EXAM ROOM.**
10. **ANSWER ALL QUESTIONS.**

SECTION A

(20 MARKS)

Answer ALL questions in this section

1. List three hazards mostly associated with electrical installation?
(3 Marks)
2. Name **three(3)** recommended personal protective equipment (PPE) and name the body part it protects.
(3 Marks)
3. State the general procedure for carrying out risk assessment in any installation.
(5 Marks)
4. What conditions in electrical installation exhibits more risk of injury?
(3 Marks)
5. Name three (3) types of ladders recommended to be used for the construction and maintenance of electrical installations.
(3 Marks)
6. Explain the difference between 'Lockout' and 'Tagout'?
(3 Marks)

SECTION B

(30 MARKS)

1. Determine the maximum demand for a single-phase 240 V installation that comprises:
 - 12 lighting points
 - 2 single and 2 double 10A socket-outlets
 - 2 x 15 A plug socket-outlets
 - 3 kW range
 - 3000W storage water heater
(15 Marks)
2. List the typical circuit groups recommended by AS/NZS 3000:2007?
(6 Marks)
3. What are the four (4) methods of determining the maximum demand of an installation.
(4 Marks)
4. A device used for the protection by automatic disconnection of supply shall not be capable of automatically reclosing, list five (5) types of devices recommended to be used for automatic disconnection of supply.
(5 Marks)

SECTION C**(50 MARKS)**

Answer the following questions using AS/NZS 3000:2007 Wiring Rules provided.

1. Define the following electrical terms:
 - (a) Authorized person
 - (b) Circuit
 - (c) Consumers mains
 - (d) Duct
 - (e) Obstacle

(10 marks)
2. State four (4) requirements of cooking appliances switch.

(4 Marks)
3. State the factors that determine method of connection between conductors and between conductors and other electrical equipment.

(4 Marks)
4. List the factors to be considered in designing in electrical installation.

(3 Marks)
5. With aid of diagram explain arms reach and identify surface expected to be occupied by persons.

(4 Marks)
6. What are the recommended minimum aerial conductor clearance for the following conductors over areas used by vehicles?
 - (a) Bare live conductors
 - (b) Insulated live conductors
 - (c) Neutral screened cable

(6 Marks)
7. State the recommended aerial conductor maximum spans of the following 6mm² conductors:
 - (a) Insulated annealed copper
 - (b) Bare hard drawn copper.
 - (c) Insulated hard drawn copper

(6 Marks)
8. Show with the aid of a diagram the recommended typical arrangement for safety services such as evacuation equipment, fire control equipment, lift main switchboard and smoke control equipment

(8 Marks)
9. Draw the diagram of a category B underground wiring system with cable located below poured concrete of 75mm minimum thickness also identify the location of the marker tape, mechanical protection and cable.

(5 Marks)

END OF QUESTION PAPER