ELECTRICAL INSTALLATION TECHNOLOGY
DME 110
MARCH/APRIL 2010 SERIES

THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

DEPARTMENT OF MEDICAL ENGINEERING

DIPLOMA IN MEDICAL ENGINEERING

END SEMESTER EXAMINATION

TIME: 2 HOURS

INSTRUCTIONS TO THE CANDIDATE.

This paper contains FIVE questions.
Attempt Question 1 and any other TWO questions.
Question 1 carries 30 marks. The other FOUR questions carry 20 marks each.

Q1. (a). Define :" wiring system". (5 marks)

(b). State

(i). Why electricity is transmitted at high voltage.

(ii). THREE causes of electrical accidents.

(iii). FIVE factors to be considered when selecting wiring systems. (10 marks)

(c). Draw wiring diagrams to show

(i). Lamp A controlled by two 2-way switches S_1 and S_2.

(ii). Lamp B controlled by a 1-way switch S_3 and two 2-way switches S_4 and S_5. (15 marks)

Q2. (a). State, with reasons, any TWO areas in hospitals which require emergency power suppliers. (6 marks)

(b). For a completed electrical installation, state any TWO aspects to be

(i) inspected

(ii) tested. (4 marks)

(c). Explain why a white-coloured room appears brighter than a blue-coloured room of the same size. (4 marks)

(d). Describe how cable size varies with

(i). voltage rating

(ii). Current rating (6 marks)

Q3.(a). Define "special installation". (5 marks)

(b). Draw wiring diagrams to show FOUR socket-outlets connected in

(i) connected in radical

(ii) connected in ring, plus a spur. (15 marks)

Q4.(a). State any FIVE types of each electrodes. (5 marks)

(b). Describe the following parts of a lighting arrestor system

(i) Air termination

(ii). Downconductor

(iii). Test-joint

(iv) Earth electrode (15 marks)

Q5(a). State any FIVE types of wiring systems. (5 marks)

(b). With the aid of a labeled diagram, describe THREE main parts of a cartridge fuse. (6 marks)

(c). Explain the principle of operation of a

(i) fuse

(ii) circuit-breaker. (9 marks)

Q1(a). Define “electric shock” (5 marks)

(b). Explain the need for Call and Alarm circuits in
(i). Hospitals
(ii). Domestic Houses (10 marks)

(c). Draw a wiring diagram to show TWO lamps controlled from three positions using two 1-way switches and an intermediate switch.
(15 marks)

Q2(a). State any FIVE types of wiring systems. (5 marks)

(b). With the aid of a labeled diagram, describe THREE main parts of a cartridge fuse. (6 marks)

(c). Explain the principle of operation of
(i). Fuse
(ii). Circuit-breaker (9 marks)

Q3(a). State any FIVE types of earth electrodes. (5 marks)

(b). Describe the following parts of a lighting arrestor system:
(i). Air termination
(ii). Down conductor
(iii). Test joint
(iv) Earth electrode (15 marks)

Q4.(a). Define “special installation”. (5 marks)

(b). Draw wiring diagrams to show FOUR socket-outlets.
(i). connected in radial
(ii). connected in ring, plus a spur. (15 marks)

Q5.(a). State, with reasons, TWO areas in hospital which require emergency power supplies. (6 marks)

(b). For a completed electrical installation, state any TWO aspects to be
(i). inspected
(ii). tested (4 marks)

(c). Explain why a white-coloured room appears brighter than a blue-coloured room of the same size. (4 marks)

(d). Describe how cable size varies with
(i). voltage rating
(ii). current rating (6 marks)