



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MEDICAL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL ENGINEERING

: ECL 2203 OPERATING THEATRE EQUIPMENT

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: 12 Aug 2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

Scientific Calculator

This paper consists of **five** questions. Attempt any **THREE** questions.

Do not write on the question paper.

QUESTION ONE

(a) Describe any **FIVE** structural recommendations for the construction of an operating theatre.

(10Marks)

(b) Describe any **FIVE** methods that can be used to avoid surgical burns during a procedure.

(10Marks)

QUESTION TWO

- (a) During a certain surgical procedure an electrical current of 2.4 A passed through a patient tissue contact point of 0.04 cm^3 .at active electrode point for a duration of 0.6 s. If the tissue resistance at contact point is 320Ω calculate:
- Resultant rise in temperature at contact point
 - Electrons flow count during the procedure.
- (8Marks)
- (b) With the aid of a labelled sketch describe the operational principles of a HARTLEY Spark Gap (hf/rf) surgical machine generator.
- (12Marks)

QUESTION THREE

- (a) List any FOUR superior features that an operating theatre table has over and above a dental chair
- (8Marks)
- (b). With the aid of neat sketches describe the THREE neutral plate output configurations of a hf/rf surgical diathermy machine.
- (12Marks)

QUESTION FOUR

- (a). Describe the THREE factors that collectively contribute to a surgical CUT.
- (6Marks)
- (b). With the aid of sketches differentiate between Monopolar and Bipolar surgical techniques.
- (6Marks)
- (c). Describe any FOUR recommendations for an operating theatre lamp.
- (8Marks)

QUESTION FIVE

Write a standard laboratory investigation report to determine the conductivity of an

Operating theatre floor

(20Marks)