



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
DEPARTMENT OF MEDICAL ENGINEERING

DIPLOMA IN MEDICAL ENGINEERING
(DME Y2 S2)

EHL 2203
OPERATING THEATRE EQUIPMENT

END OF SEMESTER EXAMINATIONS
SERIES: APRIL, 2014
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

-Question *ONE* is *COMPULSORY*.
-Attempt any other *TWO* questions.
This paper consists of 3 **PRINTED** pages

QUESTION ONE (COMPULSORY)

- (a) List any **EIGHT** superior features that an Operating Theatre table has over those of a Dental Unit. **(8 marks)**
- (b) Describe **THREE** effects of an electrical current as it passes through a biological tissues. **(6 marks)**
- (c) Describe roles of any **FIVE** surgical team/staff during a surgical procedure. **(10 marks)**
- (d) List the **SIX** structural requirements of an operating theatre window. **(6 marks)**

QUESTION TWO

- (a) With the aid of a sketch describe the operating principle of an Automatic Change-Over System of an Operating Theatre Lamp. **(12 marks)**
- (b) Describe an operating theatre room safety under the following topics:
- (i) Staff
 - (ii) Electrical Equipment
 - (iii) Medical gases
 - (iv) Humidity **(8 marks)**

QUESTION THREE

- (a) Graphically sketch to show **THREE** difference of Patient Plate Conductivity **(6 marks)**
- (b) Use sketches to describe the **THREE** RF surgical equipment Neutral Plate Configurations. **(9 marks)**
- (c) List any **FIVE** factors that influence the coagulation layer thickness (K layer) **(5 marks)**

QUESTION FOUR

- (a) Describe any **SIX** causes of surgical burns **(12 marks)**
- (b) With the help of sketch describe the operating principle of a solid state (transistorized) RF generator. **(8 marks)**

QUESTION FIVE

- (a) During a certain surgical procedure a current of 1.25 Amperes passed through a biological tissue of 190Ω for 0.64 second duration. Calculate the temperature rise at the active electrode contact field of 0.14 cm^3 **(10 marks)**
- (b) Describe constructional requirements of an Operating Theatre Hall under the following topics. **(10 marks)**
- (i) Site
 - (ii) Floor
 - (iii) Furniture
 - (iv) Walls
 - (v) Electrical Fixtures