



# **TECHNICAL UNIVERSITY OF MOMBASA**

*Faculty of Engineering and Technology*  
**DEPARTMENT OF MEDICAL ENGINEERING**

DIPLOMA IN MEDICAL ENGINEERING  
(DME Y2 S2)

**EHL 2207**  
**MEDICAL GASES SYSTEMS**

SPECIAL/SUPPLEMENTARY EXAMINATIONS

**SERIES:** JULY, 2014

**TIME:** 2 HOURS

**INSTRUCTIONS TO CANDIDATES:**

-Answer the **COMPULSORY** question No. 1 and any other **TWO** questions.  
This paper consists of **3 PRINTED** pages

### QUESTION ONE (COMPULSORY)

- (a) By use of a sketch describe the operating principles of an oxygen concentrator machine. **(10 marks)**

Outline any **FIVE** medical gases with respective effects/uses in each case. **(10 marks)**

- (c) (i) List any **FIVE** key points to be considered in the construction of the main cylinders store layout **(5 marks)**

- (ii) List any **FIVE** duties of the authorized person in “permit to work procedures” **(5 marks)**

### QUESTION TWO

- (a) Sketch to describe the operating principles of a twin drying columns of a medical compressed air plant. **(14 marks)**

- (b) List any **SIX** electrical requirements of a MPGVI. **(6 marks)**

### QUESTION THREE

- (a) Describe the **THREE** hazard levels involved in “Permit to Work Procedures” **(6 marks)**

- (b) Describe the **THREE** hazard conditions associated with compressed dissolved and liquefied medical gas cylinders. **(6 marks)**

- (c) Describe any **FOUR** harsh conditions under which an oxygen concentrator should work as per “WHO” requirements. **(8 marks)**

### QUESTION FOUR

- (a) By tabulation show the colour coding for **SIX** medical cylinder gases. **(12 marks)**

- (b) Describe the **EIGHT** procedures to replenish on exhausted cylinder Manifold Bank **(8 marks)**

### QUESTION FIVE

Fig 1 represents a VIE oxygen plant.

**(a)** Name the 7 marked features

**(7 marks)**

**(b)** Describe the operating principle of the VIE oxygen plant in 5(a)

**(13 marks)**