



TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Applied & Health
Sciences

DEPARTMENT OF MATHEMATICS & PHYSICS
DIPLOMA IN SCIENCE LABORATORY TECHNOLOGY
(DSL T 12J)

APS 2101: PHYSICS FOR ENGINEERS

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

- a) State any FOUR uses of water in health facilities. **(4 marks)**
- b) State the colours assigned to the following gases:
(i) Inert
(ii) Flamable
(iii) Oxygen
(iv) Argon
(v) Nitrogen **(5 marks)**
- c) State any THREE sources of natural water **(3 marks)**
- d) With an aid of a diagram, explain how a reciprocating compressor works **(6 marks)**
- e) State and explain any THREE types of residential water heaters **(6 marks)**
- f) Draw a labeled layout of a gas distribution system **(6 marks)**

Question Two

- a) (i) State any THREE types of compressors **(3 marks)**
(ii) State any THREE uses of compressors **(3 marks)**
- b) With an aid of a well labeled diagram, explain the operation of two stage reciprocating compressor. **(9 marks)**

Question Three

- a) State the differences between the following water heating methods:
(i) Instantaneous water heater
(ii) Indirect water heaters **(4 marks)**
- b) With the aid of a well labeled diagram, describe how the indirect water heating systems works. **(11 marks)**

Question Four

- a) Briefly explain the following terms:
(i) Stroke
(ii) Bottom dead center
(iii) Top dead center **(3 marks)**
- b) With an aid of a well labeled diagram, describe how a spark ignitum internal combustion engine works. **(12 marks)**

Question Five

- a) State ONE advantage and disadvantage of a swallow well piston pump **(2 marks)**
- b) State the first THREE stages of raw water treatment **(5 marks)**
- c) Draw a well labeled diagram of a swallow well piston pum and briefly explain how it works. **(8 marks)**