



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

BSC IN CIVIL ENGINEERING

EME 2106: WORKSHOP PRACTICE

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 17 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments.

This paper consists of **FIVE** questions.

Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE (compulsory)

- a) Describe the following health hazards and for each hazard state the precautions to be observed.
- Dust and fumes.
 - Toxic substances.
 - Noise. (10 marks)
- b) Sketch electrical symbols for the following installation equipment;
- Distribution board
 - Consumer control unit
 - Socket outlet
 - Two-way switch
 - Intermediate switch (10 marks)
- c) With the aid of suitable sketches describe the anatomy of timber and explain the characteristics of heartwoods as distinct from sapwoods. (10 marks)

Question TWO

- a) Hack saws are important workshop tools for cutting metal.
- i. With the aid of a sketch describe the following types of hack saws:
 - I. Adjustable frame hack saw,
 - II. Junior hack saw
 - III. Piercing saw.State the application of each class of hack saw. (9 marks)
 - ii. Define the following terms associated with the hack saw blade.
 - I. pitch,
 - II. set of teeth and
 - III. Number of teeth in contact with the work piece. (3 marks)
- b) With the aid of sketches explain the use the following marking out tools:
- i. Surface plate.
 - ii. Vee block.
 - iii. Surface gauge
 - iv. parallels. (8 marks)

Question THREE

- a) Describe the following wiring systems stating their application, advantages, disadvantages and any three accessories used with the system.
- i. PVC (polyvinyl chloride sheathed) cable
 - ii. Flexible conduit
 - iii. Steel class B conduit
 - iv. PVC class B conduit (10 marks)
- b) An installation is to consist of three lamps controlled by two way switches and one-way switch. The one-way switch is to act as a master switch. Four socket outlets, three connected in ring and the fourth a spur all done in steel class B conduit system.
- i. List the material required
 - ii. Draw the circuit of the system
 - iii. Describe how you will carry out the installation before its powered.
 - iv. Explain the process of assembling a simple transistor radio using a bread board. (10 marks)

Question FOUR

- a) With the aid of suitable sketches describe the following timber joinery techniques;
- i. Dovetail joints
 - ii. Scarf joints
 - iii. Tenon and groove joints
 - iv. Mortise joints (10 marks)
- b) Describe the general aspects to consider in selecting timber for;
- i. Construction – roof trusses
 - ii. Joinery works – (cabinets, doors, and tables)
 - iii. Maritime engineering. (10 marks)

Question FIVE

- a) An electrical wire is to be soldered on a stud.
 - i. Design a joint that will ensure that the connection is strong. (4 marks)
 - ii. Explain the procedure of soft soldering the joint (8 marks)
- b) Explain the effects of moisture content (m/c) in timber and outline a test to determine the percentage of the m/c of timber. (8 marks)