TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

Department of Mechanical &Automotive Engineering

UNIVERSITY EXAMINATION FOR 2016/2017

Diploma in Building and Civil Engineering

EBC 2201: WORKSHOP TECHNOLOGY AND PRACTICE III

END OF SEMESTER EXAMINATION

SERIES: JULY 2017

TIME: 2 HOURS

DATE: JULY 2017

Instructions to Candidates

1. You should have the following for this examination
   - *Answer Booklet,*
   - *Examination pass and student ID*
   - *Non –programmable calculator*
   - *Drawing Instruments*
2. This paper consists of **FIVE** questions.
3. Answer any **THREE** Questions
4. All symbols have their usual meanings.
5. This paper consist of **FIVE** printed pages
6. **Do not write on the question paper.**

Question ONE (20mks)

i. Differentiate between a fire Hazard and a fire risk giving examples in each case (4mks)

ii. Discuss the various key aspects of fire protection based on structural fire protection and early fire detection (alarm and fire detections units).(10mks)

   i. Structural fire protection

   ii. Early fire detection –alarm and fire detections units

iii. What are effects of fire hazards (2mks)

iv. Using the table below , indicate using(X) which type of fire extinguisher is suitable for the given class of fire .Leave the box blank where the combination of class of fire and extinguisher do not match.(the first row has been filled out for you)

Type of extinguisher :	Water	Foam	Vaporizing Liquid	C02	Dry powder
Class A fire(wood ,rags, paper)	X	X	-	-	-
Class B fire(grease ,oil gases)					
Class C fire (electrical)					
Class D fire (metals)					

4mks

Question TWO (20mks)

i. Describe the chiseling process (6mks)

ii. Name **TWO** types of scrappers used in workshop.(4mk)

iii. Name **FOUR** types of file.(4mks)

iv. Thread cutting taps are supplied in sets of **THREE**. Name each tap and state where each would be used.(3mks)

v. Define the term Marking out and state the **TWO** main purposes of marking out engineering components?(3mks)

Question THREE (20mks)

i. State **TWO** advantages and **TWO** disadvantages of diesel engines(4mks)

ii. Describe the **FOUR** stage in petrol engines (8mks)

iii. State the main difference between 4 stroke and 2 stroke petrol engines (4mks)

iv. State **TWO** advantages and **TWO** disadvantages of petrol engines (4mks)

Question FOUR (20mks)

i. Differentiate between a kinetic and displacement pump(2mks)

ii. Compare and contrast centrifugal pumps ,reciprocating pumps and rotary pumps by filling the table below (8mks)

Parameters	Centrifugal pumps	Reciprocating pumps	Rotary pumps
Pressure application			
Low flow capabilities/relief valves required			
Smooth or pulsating flow			
Space consideration			
Costs			

iii. State **TWO** areas where pumps can be used(2mks)

iv. Differentiate between a centrifugal pump and positive displacement pumps (2mks)

v. What is a pump and it purpose (2mks)

vi. Name **TWO** major categories of pumps giving examples (4mks)

Question FIVE (20mks)

i. A single cylinder double acting reciprocating pump has a piston diameter of 300mm and stroke length of 400mm. When the pump runs at 45rpm, it discharges 0.039 m^3/s under a total head of l5m. What will be the volumetric efficiency, work done per second and power required if the mechanical efficiency of the pump is 75 percent?(6mks)

ii. State **ONE** advantages and **ONE** disadvantages of four stroke diesel engines (2mks)

iii. State the **FOUR** strokes /stages in the four stroke petrol engines (4mks)

iv. What are the roles of fire detection and alarm systems (1mks)

v. Explain how compartmentalization of spaces aids in fire controls (1mks)

vi. Why are surface tables and plates used when marking out?(1mks)

vii. What is the purpose of using a reamer?(1mk)

viii. State **TWO** common types of chisels and their respective uses.(4mks)

END