TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

DEPARTMENT OF MEDICAL ENGINEERING

DIPLOMA IN MEDICAL ENGINEERING
(DME 113)

EHL 2105

WORKSHOP TECHNOLOGY AND PRACTICE II

END OF SEMESTER EXAMINATIONS
SERIES: APRIL/MAY, 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) Figure 1 shows a plan view of a centre lathe machine. Name parts marked 1 to 12 **(12 marks)**

(The figure is shown at the last page of this paper)

(b) Explain the functions of any **SIX** of the parts in (a) **(12 marks)**

(c) Explain any **THREE** operations that can be carried on using a centre lathe machine. **(6 marks)**

QUESTION TWO

(a) Describe any **FIVE** metal joining methods. **(6 marks)**

(b) Explain any **FIVE** workshop Rules and Regulations. **(14 marks)**

QUESTION THREE

(a) A cylindrical mild steel bar of diameter 30 mm has to be reduced to 20 mm diameter using a centre lathe. Calculate the work piece speed in revolutions per minute given that the cutting speed of mild steel is 30 meters per minute. **(6 marks)**

(b) The available speeds in the headstock are 30, 50, 65, 90, 110, 155, 190, 260, 320, 440, 540, 740, 900, 1230, 1500 and 2500 revolutions per minute (RPM). With reasons, which speed is appropriate for this turning operation in 3 (a) **(4 marks)**

(c) Define the following terms as used in machine tool practice:-
(i) Cutting speed
(ii) Feed rate
(iii) Spindle speed. **(3 marks)**

(d) Sketch and label a sensitive Bench drilling machine **(7 marks)**

QUESTION FOUR

(a) Explain any **FIVE** methods of clamping/holding work piece on a centre lathe. **(10 marks)**

(b) Differentiate between the following as used on a centre lathe:-
(i) Travelling steady (Follower Rest)
(ii) Fixed steady (Centre Rest) **(6 marks)**

(c) Sketch a double shear rivet joint **(4 marks)**

QUESTION FIVE

(a) Sketch to show any **FIVE** operations/ processes which can be done using drilling machine. **(15 marks)**

(b) Given is the thread configuration “M 10 x 1”. Explain the meaning of this thread configuration.
(5 marks)