TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Engineering & Technology

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATIONS FOR DEGREE IN
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

EMG 2202: WORKSHOP II

END OF SEMESTER EXAMINATIONS
SERIES: APRIL 2015
TIME: 2 HOURS

INSTRUCTIONS:

− Answer question **ONE (Compulsory) and** any other **TWO** questions
This paper consists of Two printed pages

QUESTION 1 (Compulsory)

a) i) Outline **FOUR** classes of lathe tools
    ii) Outline **FOUR** lathe operations
    iii) What is the difference between facing and turning.   **(10 marks)**

b) For turning a carbon steel cylinder of length 3.6m and diameter 0.24m at a feed rate of 0.7mm/rev with a HSS t00, one of the two available cutting speeds is to be selected. These two cutting speeds are 120m/min and 68m/min.
    The tool life corresponding to the speed of 120m/min is known to be 15 minutes with n = 0.6. the cost of machining time is Ksh. 1.5/sec.
    The cost of one tool resharpening is Ksh. 25.
    Which of the two cutting speeds should be selected from the point of view of cost of producing the component. Prove your argument.   **(10 marks)**

c) i) List any **FOUR** ways of classification of drills.
    ii) List **FIVE** workholding devices for a drilling machine.   **(10 marks)**

QUESTION 2

a) Briefly explain the different parts of a centre lathe with the aid of a sketch.   **(10 marks)**

b) With the aid of sketches briefly describe two different types of drilling machines.   **(6 marks)**

c) Briefly describe the mechanical quick return mechanism of shaping machine.   **(4 marks)**

QUESTION 3

a) Give the difference between a turret and capstan lathe.

b) Explain briefly with a sketch the main parts of a turret lathe.

c) Explain briefly the limitations of a centre lathe.   **(20 marks)**

QUESTION 4

a) Discuss how a shaping machine is classified.

b) Explain how a shaping machine is specified.   **(20 marks)**

QUESTION 5

a) Briefly explain **FIVE** operations that can be carried on a drilling machine.   **(10 marks)**

b) Briefly explain how **FOUR** drilling machines can be specified.   **(4 marks)**

c) A hole of 25 mm diameter is to be drilled. The depth of the hole is 70mm. the suggested feed is 1.2mm per rev and the cutting speed is 60m/min. Assuming overtravel is 2mm . calculate
   i) Spindle speed
   ii) Cutting time
   iii) Material removal rate

          (6 marks)