



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF
SCIENCE IN MECHANICAL ENGINEERING

EMM 216: WORKSHOP PROCESSES & PRACTICE III

DATE: 19/6/2017

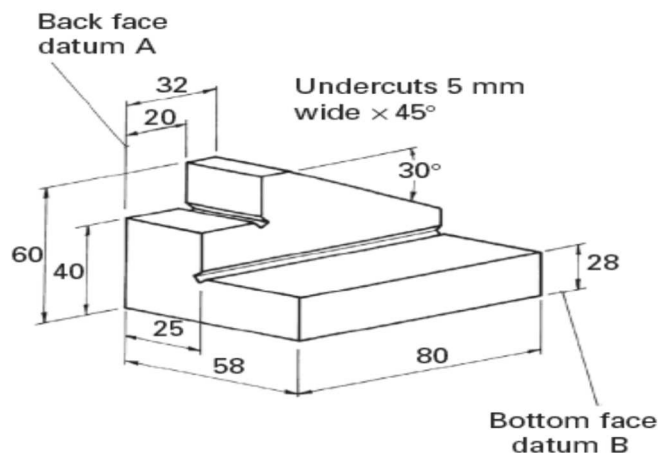
TIME: 8:30 – 10:30 AM

INSTRUCTIONS

- Answer Question One And Any Other Two Questions

QUESTION ONE- 30MARKS

- a) The component below is to be fabricated in the workshop using the available machines.



- Outline the tools required to produce the above component (3 marks)
- Explain procedures use to produce the component (9 marks)

- b) Describe the following elements
- i. Column and base
 - ii. Knee
 - iii. Saddle
 - iv. Spindle (8 marks)
- c) Describe the following cutters
- i. Cylindrical cutters
 - ii. Side and face cutter
 - iii. Angle milling cutter
 - iv. slot drill (10 marks)

QUESTION TWO- 20MARKS

- a) Explain the working principle of the dividing head (6 marks)
- b) Describe how rotary table function in the milling machine (6 marks)
- c) Describe in detail the elements of a surface grinder (8 marks)

QUESTION THREE- 20 MARKS

- a) Explain the working principle of the permanent – magnet chuck (6 marks)
- b) Describe the following
- i. Wheel dressing
 - ii. Wheel balancing (6 marks)
- c) Describe the following operations
- i. Buffing
 - ii. Lapping
 - iii. Honing
 - iv. Superfinishing (8 marks)

QUESTION FOUR- 20 MARKS

- a) Explain the following
 - i. Plain centre type cylindrical grinder
 - ii. Universal cylindrical surface grinder (6 marks)
- b) Explain the working principles of centerless internal grinder (6 marks)
- c) Sketch and explain the working principles of Tungsten inert gas welding (8 marks)

QUESTION FIVE- 20 MARKS

- a) Explain the following types of welding flame
 - i. Neutral welding flame
 - ii. Carburizing welding flame
 - iii. Oxidizing welding flame (6 marks)
- b) Sketch and explain the working principle of arc welding process (5 marks)
- c) Explain four functions electrode coating ingredients (4 marks)
- d) Sketch and explain causes of any five welding defects (5 marks)