



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

EMM 414: INDUSTRIAL ERGONOMICS

DATE: 10/11/2020

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question one and *any other two questions*

QUESTION ONE (30 MARKS)

- a) Discuss the importance of ergonomics education and training (6 marks)
- b) Discuss the goals of ergonomics education and training (8 marks)
- c) Explain three areas that Ergonomic risk factors interact (6 marks)
- d) Discuss any five physical risk factors (8 marks)

QUESTION TWO (20 MARKS)

- a) Explain the philosophy of ergonomics design (6 marks)
- b) Explain industrial ergonomics, and state its objectives. (6 marks)
- c) Discuss why it is important to study ergonomics (8 marks)

QUESTION THREE (20 MARKS)

- a) Describe how musculoskeletal disorders can be prevented at the workplace (6 marks)
- b) Explain characteristics of any job put the user at risk for MSDs (6 marks)
- c) Discuss how anthropometric data used in design (8 marks)

QUESTION FOUR (20 MARKS)

- a) Explain the role does ergonomics play in the environmental man-machine interface (6 marks)
- b) Describe five environmental factors that affect the performance of a worker. (8 marks)
- c) Discuss recommendations should be given for each on environmental factors so as to reduce their effects on productivity. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Explain three human-machine system (6 marks)
- b) With the aid of a diagram explain human-machine control loop. (6 marks)
- c) Describe four human factors that must be considered when designing products. (8 marks)