

MACHAKOS UNIVERSITY
UNIVERSITY EXAMINATIONS 2018/2019
SCHOOL OF ENGINEERING AND MANUFACTURING ENGINEERING
FOURTH YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE MECHANICAL ENGINEERING

EMM414: INDUSTRIAL ERGONOMICS

DATE:

TIME: 2 Hours

INSTRUCTIONS

- The Paper Consists of FIVE questions
- Answer Question ONE and ANY other TWO questions
- Use clear and neat diagrams
- Answer books provided

.....
Question one 30Marks (Compulsory)

Mrs Fatuma is a technician engineer in-charge of ergonomics Department at Machakos Metal and Ceramics Manufacturing Industry. She has approached you as a training consultant in the following areas

- Social Significance of ergonomics to Machakos Metal and Ceramics Manufacturing Industry
- Ergonomics problems found in the workplace and mitigation measures
- Posture and movements in the workplace with focus to lifting and change of posture

Prepare a technical training manual as per the following template:

- | | |
|---|-----------|
| a) Title: | (2 Marks) |
| b) Introduction | (2 Marks) |
| c) Significance of Ergonomics in manufacturing Industry | (4 Marks) |
| d) Ergonomics problems found in the workplace and mitigation measures | (8 Marks) |
| e) Posture and movements in the workplace in lifting | (6 Marks) |
| f) Principles of Biomechanical | (6 Marks) |
| g) Conclusion | (2 Marks) |

Question Two

- a) Describe three factors to consider in assessing fit to the work (6 Marks)
- b) As a project Officer outline the procedure of assessing if there are ergonomics problems in a metalwork engineering workshop? (14 Marks)

Question Three

- a) Describe two principles related to Physiological (8 Marks)
- b) Discuss two applications of anthropometric in ergonomics (12 Marks)

Question Four

- a) Describe the following two information and operation ergonomics consideration in metal working industry (8 Marks)
 - (i) Visual information
 - (ii) Use of operation Controls
- b) Describe the three types of measure that can be applied to reduce or eliminate the adverse effects of noise as environmental factors in the industry (12 Marks)

Question Five.

- a) Discuss the best posture and movement ergonomics consideration in a manufacturing industry based on : (8 Marks)
 - (i) Sitting workstation
 - (ii) Change of posture
- b) Illustrate and explain the Basic Human-Machine Interaction model as applied in industrial ergonomics (12 Marks)