MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIVERSITY ORDINARY EXAMINATION

2021/2022 ACADEMIC YEAR

FOURTH YEAR **SECOND** SEMESTER EXAMINATION FOR BACHELOR OF EDUCATION IN MECHANICAL ENGINEERING

EMT 411: TQM AND RELIABILITY

DURATION: 2 HOURS

Instructions to candidates:

1. Question One is compulsory
2. Attempt any other Two questions in section B
3. Mobile phones are not allowed in the examination room
4. You are not allowed to write on this examination question paper

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

a) Define the term Total Quality Management. (1mark)
b) Using suitable diagrams explain the following TQM tools:
   i. Run charts (2marks)
   ii. Ishikawa diagrams (2marks)
c) Explain five reasons why quality has been brought to the forefront of management in most organisations. (10marks)
d) Differentiate between technical quality and functional quality. (1mark)
e) Describe the 14 points for management as outlined in Deming's philosophy of TQM. (14marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) What is the cost of quality? (2marks)
b) Explain the six elements of TQM. (12marks)
c) Describe two causes of TQM implementation failures. (2marks)
d) Using a graph of performance against time, explain how processes are controlled. (4marks)

QUESTION THREE (20 MARKS)

a) Define the term customer focus. (1mark)
b) Using the Teboul model, describe how customer satisfaction is attained by an organisation. (6marks)
c) Describe two aspects that determine whether a product will meet customer satisfaction demands. (4marks)
d) Describe the nine steps that need to be taken into consideration in order to achieve high customer retention. (9marks)

QUESTION FOUR (20 MARKS)

a) Explain five aspects of employee involvement. (10marks)
b) Using the example of a fan motor and blade assembly, describe the function and construction of parameter diagrams. (6marks)
c) The characteristic life for a highly turbo charged diesel engine in a military application is 1800 miles with a Weibull slope of 1.97. what is the B_{10} life. (4marks)