TECHNICAL UNIVERSITY OF MOMBASA

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

FOUTH YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE
DEGREE IN BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING (BSME)

EMG 2415
RESEARCH METHODOLOGY

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER, 2013

TIME: 2 HOURS

INSTRUCTION TO CANDIDATES

1. You should have the following for this examination:-
   • Answer Booklet
   • A computer with installed AutoCAD programme
   • Drawing Instruments

2. This paper consists of **FIVE** questions.
3. Answer Question **ONE** is **COMPULSORY**, **ONE**
   Question from Section **B** and **ONE** Question from Section **C**.
4. Maximum marks for each part of Question are as shown.
5. This paper consists of **THREE** printed pages.

Question ONE (Compulsory)

(a)   Distinguish between conceptual definitions and operational definitions in a research.
(4 marks)

(b)   Explain the main distinguishing characteristics of a scientific research.   **(8 marks)**

(c)   You have received a research report done by a registered engineer who had been hired by your firm. The report is an audit on the awareness of fire safety among your employees and covers the opinions of about 50 secretaries and clerks plus about 10 executive. You

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are asked to comment on its quality. What are the main components of a good research that you will look for in this report? **(10 marks)**

(d)   Discuss problems that you may experience when using secondary sources of data.

(8 marks)

Question TWO

(a)   Report writing is always a challenging job. Identify common weaknesses in research report writing. **(10 marks)**

(b)   Research reports often contain statistical material of great importance. Discuss different ways of presenting statistics in research reports. **(10 marks)**

Question THREE

Whether data are gathered in an experiment, interview, observation, or survey, the respondent has many rights to be safeguarded. Discuss some of the rights of the respondents that a researcher should respect. **(20 marks)**

Question FOUR

(a)   What are the major sources of research problem? **(10 marks)**

(b)   Describe any **THREE** non probability sampling techniques used in research. **(10 marks)**

Question FIVE

(a)   Distinguish between response error, interviewer error and non response error in a research. **(6 marks)**

(b)   Differentiate between the following scales:

(i)	Nominal scales	**(2 marks)**
(ii)	Ordinal scales	**(2 marks)**
(iii)	Interval scales	**(2 marks)**
(iv)	Ratio scales	**(2 marks)**

(c)   The internal auditor suspects that the spare parts from a small number of vendors contain errors and therefore decides to do a quality check to validate his suspicion. Discuss the advantages of using this method in a research.   **(6 marks)**