



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of Mechanical & Automotive Engineering
UNIVERSITY EXAMINATION FOR:
BSc. Mechanical Engineering
EMG 2415 : Research Methods
END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2016
TIME: 2 HOURS
DATE: 15 Dec 2016

Instructions to Candidates

You should have the following for this examination

- Answer booklet
- Non-Programmable scientific calculator

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions.

Maximum marks for each part of a question are as shown.

Do not write on the question paper.

Question ONE (Compulsory)

- Enumerate briefly the mechanism of report writing and underline the precaution to be taken at the time of report writing. **(6 marks)**
- Give the definition of a research problem and briefly describe the criteria for prioritizing problems for research.
- Explain any **SIX** motivational factors for conducting research. **(6 marks)**
- Distinguish between the following types of research:
 - Pure research and applied research
 - Exploratory and explanatory research
 - Quantitative and qualitative research **(12 marks)**
- State and explain briefly any **THREE** types of knowledge that research can add to. **(6 marks)**

Question TWO

- Explain the meaning and significance of a literature review when carrying out a research study. **(8 marks)**
- State and explain any four challenges that might affect the researcher during the formulation of a literature review. **(4 marks)**
- State and explain briefly the steps involved in formulating literature review. **(8 marks)**

Question THREE

- a. Briefly describe the steps involved in a research process with suitable illustrations. **(16 marks)**
- b. State any FOUR major problems and constraints faced by researchers. **(4 marks)**

Question FOUR

- a. Define the terms “Data collection” as used in research and briefly explain any TWO challenges faced by researchers during data collection. **(4 marks)**
- b. State and explain briefly five factors to consider during data collection. **(10 marks)**
- c. Explain the essential steps that a researcher should use in data collection. **(6 marks)**

Question FIVE

- a. State and explain briefly any four qualities of an effective research thesis **(8 marks)**
- b. State and explain briefly any FOUR data-presentation techniques. **(12 marks)**