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TECHNICAL UNIVERSITY OF MOMBASA

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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: APRIL 2016  
TIME: 2 HOURS  
DATE: 15 Apr 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.**

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**Question ONE (Compulsory)**

- Enumerate briefly the mechanism of report writing and underline the precaution to be taken at the time of report writing. **(10 marks)**
- Give the definition of a research problem and briefly describe the criteria for prioritizing problems for research. **(6 marks)**
- Explain the following types of research:
  - Descriptive
  - Correlational
  - Explanatory
  - Exploratory **(8 marks)**
- Differentiate between a general and specific objectives. Give an example for each. **(6 marks)**

**Question TWO**

- Define literature review as used in research and explain the **THREE** main sources of literature review. **(8 marks)**
- In the event of carrying out research studies a researcher reviews related literature of materials in relation to problem of the research, briefly explain the challenges that may be encountered during this 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 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 following terms:
  - i. Primary data
  - ii. Secondary data **(4 marks)**
- a. State and explain briefly THREE factors to consider during data collection. **(6 marks)**
- b. Explain the essential steps that a researcher should use in data collection. **(10 marks)**

### **Question FIVE**

- a. Outline the steps involved in qualitative data analysis **(8 marks)**
- b. State and explain briefly any FOUR data-presentation techniques. **(12 marks)**