INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

FACULTY OF ENGINEERING

END OF SEMESTER EXAMINATIONS - APRIL 2025

PROGRAMME: BACHELOR OF PETROLEUM ENGINEERING

YEAR/SEM: YEAR 2/SEMESTER 2

COURSE CODE: PTE2253

NAME: RESEARCH METHODS

DATE: 2025-04-16

TIME: 9:00AM-12:00PM

INSTRUCTIONS TO CANDIDATES:

1. Read the instructions very carefully
2. The time allowed for this examination is STRICTLY three hours
3. Read each question carefully before you attempt and allocate your time equally between all the Sections
4. Write clearly and legibly. Illegible handwriting cannot be marked
5. Number the questions you have attempted
6. Use of appropriate workplace examples to illustrate your answers will earn you bonus marks
7. Any examination malpractice detected will lead to automatic disqualification.

DO NOT WRITE ANYTHING ON THE QUESTION PAPER

Section A Attempt any TWO (2) Questions from Section A. Each question carries 20 marks. Any unclear handwriting will lead to loss of marks

Question 1:

a) What role do hypotheses play in petroleum engineering research?
b) How do you formulate a testable hypothesis?
c) Illustrate with an example related to enhanced oil recovery.

Question 2:

a) Describe the concept of sampling in research methods.
b) Compare different sampling techniques used in petroleum engineering studies.
c) Why is choosing the right sampling method critical?

Question 3:

a) Define research methods.
b) Discuss the key characteristics of research methods.
c) Explain why research methods are vital for petroleum engineering.

Question 4:

a) Outline the steps involved in designing a petroleum engineering research study.
b) For each step, explain its significance.
c) Discuss how these steps can help in field-related problem-solving

Section B Attempt any THREE (3) Questions from Section B. Each question carries 20 marks. Any unclear handwriting will lead to loss of marks

Question 1:

a) Define research ethics.
b) Why are research ethics critical in petroleum engineering?
c) Provide examples of ethical dilemmas that may arise in petroleum engineering research.
d) What are the consequences of unethical practices in petroleum engineering research?
e) How can these practices affect the environment, society, and industry reputation?
f) Discuss a real or hypothetical example of such consequences

Question 2:

a) Define the term â??abstractingâ?• in research.
b) What are the common mistakes made when writing abstracts?
c) Explain how abstracts contribute to academic and professional communication
d) Describe the key components of a well-structured abstract.
e) Why is it important to include each of these components?
f) Provide an example of an abstract format for a petroleum engineering research paper.

Question 3:

a) What are the consequences of formulating research objectives that do not align with the research problem?
b) How can students ensure that their research objectives are specific and measurable?
c) What is the significance of formulating clear research objectives in petroleum engineering research?
d) How does the formulation of research objectives impact the overall research methodology in petroleum engineering studies?
e) Explain the difference between general objectives and specific objectives in the context of petroleum engineering research.
f) Give an example of a research objective related to the study of enhanced oil recovery (EOR) and explain its potential significance to the petroleum industry.

Question 4:

a) Compare primary and secondary data in research.
b) Provide examples of each in the context of petroleum engineering.
c) What are the advantages and disadvantages of using secondary data? d) Discuss the concept of data quality in research.
e) What are the key attributes of high-quality research data?
f) How can researchers ensure data quality in petroleum engineering studies?