SCHOOL   : ENVIRONMENTAL SCIENCES
MODULE   : RESEARCH METHODS IN ENVIRONMENTAL SCIENCE
CODE   : ENVS700

DURATION: 3 HOURS   **TOTAL MARKS: 300**

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INTERNAL EXAMINERS: PROF F. AHMED, PROF S. PROCHES, DR S. PILLAY
EXTERNAL EXAMINER: PROF S. GRAB
                    UNIVERSITY OF WITWATERSRAND

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This paper consists of **ONE** page

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*Answer **BOTH** questions in **Section A** and **any TWO** questions from **Section B***

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Section A: (**ANSWER BOTH QUESTIONS 1 AND 2**)

1. Briefly explain the relevance of probability theory to determining significance in statistical
    comparisons, providing two simple examples.   **(50 marks)**

2. What is multiple regression? What are its advantages and limitations, and how does one build
    and validate a multiple regression model?   **(50 marks)**

Section B: (**ANSWER TWO OF THE FOLLOWING FOUR QUESTIONS**)

3. Citing examples, discuss the conceptual framework commonly used in natural science research
    and any two conceptual frameworks used in social sciences. In your answer, outline the main
    differences between Natural Science and Social Science research and explain why
    Environmental Science as a discipline demands an integrated approach to research.
                                                                             (100 marks)

4. You are in charge of identifying key environmental issues in an urban neighbourhood using a
    broad variety of field techniques. Write a brief methods section for a project proposal,
    indicating the type and volume of data you will collect. Describe in detail ways in which you
    would propose analysing these data, mentioning at least three methods of statistical analysis.
                                                                             (100 marks)

5. You have been requested to review an environmental science research article by a popular
    journal. Explain how you would critically assess and de-construct the article keeping in mind
    the general expectations of mainline journals in this discipline.   **(100 marks)**

6. Develop a critique of the way in which research is assessed nationally and internationally.
    Comment on metrics based on the number of citations a paper receives, author contributions
    in multi-authored papers, as well as on the peer-reviewing process.   (**100 marks**)