**SCHOOL OF NATURAL SCIENCES AND AGRICULTURE**



**Kampala**

**University**

**UNIVERSITY EXAMINATIONS 2023**

**SCHOOL OF EDUCATION**

**DECEMBER SESSION EXAMINATIONS**

**BPMTC : 1112 INTRODUCTION TO DIFFERENTIAL CALCULUS 1 (PRIMARY OPTION)**

**Time 3Hours**

**Instruction:** Answer any **five** questions.

**Question One**

1. Given that . Find the composite function of
2. (i) (02 marks)
3. Given that . Find the composite function of

**Question Two**

Work out the following

(i)  (07 marks)

(ii)  (07 marks)

(iii)  (06 marks)

**Question Three**

1. If given that . Show from first principles that then . (10mks).
2. hence illustrate the fact that (10 marks)

**Question Four**

Determine the limits of the functions below as (06 marks)

1. (06 marks)
2. (06 marks)
3. Show that the limit of as is 4. (use the ) (08 marks)

**Question Five**

1. Investigate the limit with a function as (10 marks)
2. i) Define a limit (03 mark)

(ii) Prove that if the limit of a function f (x) as x approaches 0 exists then it is unique. (07 marks)

**Question Six**

1. Differentiate the limits of the following

4. (20 mark)

**Question Seven**

1. Find if (05 mark)
2. Given the function
3. Find (10 marks)
4. Find (02 marks)
5. Find the value of (03 marks)

**Question Eight**

1. Use chain rule to differentiate (04 marks)
2. Use the product rule to differentiate (08 marks)
3. Use the quotient rule to differentiate (08 marks)

**END**