BBM 113

98HGE

ALUPE UNIVERSITY COLLEGE

...Bastion of Knowledge...

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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER EXAMINATION

For examiner's Use Only

Question	I.E	E.E
CAT		
EXAM		
TOTAL		

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT

SCHOOL: BUSINESS, ECONOMICS & HUMAN RESOURCE DEVELOPMENT

COURSE CODE: BBM 113

COURSE TITLE: BUSINESS MATHEMATICS I

DATE: 13th December, 2017 **TIME:** 2.00pm-5.00pm

INSTRUCTION TO CANDIDATES: SEE INSIDE

THIS PAPER CONSISTS OF 20 PRINTED PAGES   **PLEASE TURN OVER**

Insert the numbers of the questions you have answered in the order done

Student Admission No..............................Exam Card No......................Signature............

INSTRUCTIONS TO CANDIDATES

1. Write your **Admission Number**, **Exam Card Number** and **Sign** in the spaces provided at the bottom of each page of the Examination Booklet. DO NOT write your name anywhere in this booklet.

2. Write on both sides of the pages.

3. All rough work must be done in the Answer sheets and crossed through.

4. If supplementary pages are used, they must be fastened all together at the end of this Booklet. Supplementary pages should be used only after all the leaves in the booklet have been exhausted.

5. It is a serious examination offence to cheat or to have unauthorized materials including **MOBILE PHONES** (whether on or off) in the examination venue.

6. In no circumstances must Answer Booklet used or unused, be removed from the examination room by a candidate.

7. The Booklet is for **Examination use only** in a designated examination room. Unauthorized possession of the Answer sheets by a student or any other person constitutes an examination irregularity calling for stiff disciplinary action.

8. Do not pluck any page from this Booklet. Any extra/unused answer sheets should be returned to the **Examination Office.**

9. Candidates who come to examination room 30 minutes late will not be allowed to sit for the exam.

10. Candidates will not be allowed to leave the exam room once the exam commences.

11. Candidates are advised that importance is attached by examiners to accuracy and clarity of expression.

12. Committing any form of irregularity is prohibited and shall attract severe disciplinary action in accordance with Alupe University College Examination Regulations.

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INSTRUCTIONS:-

- Answer Question **ONE** and any other **TWO** Questions.
- Question **ONE** carries **30 Marks**

Question One (30 Marks)

a)   Explain with examples what is:
- (i)   A set
- (ii)   A venn diagram
- (iii)   A universal set
- (iv)   A Dijoint – set
- (v)   A Subset

b)   (i)   Verify that $(AUB)^1 = A^1n\ B^1$

      (ii)   Given that:

$$U = \{3, 4, 5, 6 \ldots\ldots 12\}$$

$$A = \{3, 4, 8, 9\}$$

$$B = \{4, 5, 7, 9, 10\}$$

$$C = \{3, 4, 5, 6, 8, 9\}$$

$$D = \{4, 6, 8, 11\}$$

     Basing on the sets given above, evaluate the following:
- (I) $C\ U\ (B\ U\ \Delta)$
- (II) $B\ n\ (AUC)$
- (III) $B\ n\ \phi$
- (IV) BUB^1

c)   An ice cream parlour wanted to know what flavours most popular. A survey of 100 customers revealed that 56 customers liked vanilla, 55 customers liked chocolate and 59 customers liked strawberry, 43 customers liked vanilla and chocolate, 41 liked vanilla and strawberry, 40 liked strawberry and chocolate, 30 customers liked all the three of the flavours:

- (i)   How many customers liked vanilla or chocolate?
- (ii)   How many customers liked none of these flavours?
- (iii)   How many customers liked only one flavour?
- (iv)   How many did not like vanilla?

Question Two (20 Marks)

A company invests in a particular project and it has been estimated that after x months of running, the cumulative profit (¥000) from the project is given by the function $31.5x - 3x^2 - 60$, where x represent time in months. The project can run for nine months at the most:

a)   Draw a graph which represents the profit function.
b)   Calculate the 'break even' time points for the project.
c)   What is the initial cost of the project?
d)   Use the graph, to estimate the best time to end the project.

Question Three (20 Marks)

a)   A furniture factory manufactures two types of coffee table, A and B. Each table goes through two distinct costing stages, assembly and finishing. The maximum capacity for assembly is 195 hours and for finishing, 165 hours. Each A table requires 4 hours assembly and 3 hours finishing. While B table requires 1 hour for assembly and 2 hours for finishing. Calculate the number of A and B tables to be produced to ensure that the maximum capacity available is utilized.

b)   Solve the following system of linear equations:
        x, y and z
        y: z = 2: 1
        $10x + y = 0$
        $5x + y + 2z = 15$

Question Four (20 Marks)

a)   (i)   Differentiate between simple and compound interest.
        (ii)   A firm plans to invest an amount of money at the beginning of every year in order to accrue a sum of ε100, 000 at the end of five years period. What is the value of the amount, if the investment rate is 14%?

b)   (i)   What do you understand by the term discounting?
        (ii)   A departmental store advertises goods at $700 deposit and three further equal annual payment of $500. If the discount rate is 7.5%, calculate the present value of the goods.