**KABARAK UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**SECOND SEMESTER 2020/2021 ACADEMIC YEAR**

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ECONOMICS AND MATHEMATICS/STATISTICS AND BACHELOR OF SCIENCE ACTUARIAL SCIENCE**

**MATH 312: ORDINARY DIFFERENTIAL EQUATION 1**

**STREAM: Y3/S1 - REGULAR TIME: 9:00-11:00AM**

**EXAMINATION SESSION: JANUARY - APRIL DATE: 10/5/2021**

**INSTRUCTIONS TO CANDIDATES**

1. **Answer Question 1 and any other two questions in the answer booklet provided.**
2. **Do not write on your question papers. All rough work should be done in your answer booklet.**
3. **Clearly indicate which question you are answering.**
4. **Write neatly and legibly.**
5. **Edit your work for language and grammar errors.**
6. **Follow all the instructions in the answer booklet**

**SECTION A: (COMPULSORY) TOTAL MARKS FOR THIS SECTION IS 30.**

**QUESTION ONE**

1. Differentiate between

Ordinary differential equations and Partial differential equation

[2marks]

Linear and non linear differential equations

[2marks]

1. Solve the following IVP [5marks]

1. Find the solution to the following IVP

[4marks]

1. Find the general solution to the differential equation

[4marks]

1. Use the method of undermined coefficient to solve

[7marks]

1. Find the general solution to given that ,

[6marks]

**SECTION B. TOTAL MARKS FOR THIS SECTION IS 40.**

**ANSWER ANY TWO QUESTIONS FROM THIS SECTION. EACH QUESTION IN THIS SECTION CARRIES 20 MARKS.**

**QUESTION TWO**

1. Solve

[5marks]

1. Find the general solution of . using the method of variation of parameters

[8marks]

1. Solve the initial value problem

[7marks]

**QUESTIONTHREE**

1. Find a general solution to the following differential

[6marks]

1. Solve the initial value problem

,

[8marks]

1. Solve

[6marks]

**QUESTION FOUR**

1. Solve for

[7marks]

1. Solve the following IVP

[7marks]

(0)=2

1. Find a particular solution for the following differential equation

[6marks]

**QUESTION FIVE**

1. Consider the differential equation passing through the point . Determine

[8marks]

1. Solve the following IVP

[6marks]

1. Solve

[6marks]