UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, NOV/DEC 2017

COURSE NO: MA 261
COURSE NAME: OBJECT ORIENTED PROGRAMMING WITH C++
CLASS: MA II TIME: 2 HOURS

Name**:** _____Index Number: _____

Answer any Two Questions. Each question carries 30 marks.

Question one

A public Library which allows registered members to borrow books work by the following guidelines: A book borrowed and returned within seven days is free of charge. If it is returned within fourteen days, it attracts a penalty payable in Ghana cedis computed as: 7d + d. If it is returned within thirty days, it attracts a penalty payable in Ghana cedis computed as: d^2+7d +5 (d is the total number of days elapsed after the first seven days). The user gets blacklisted if a book is returned any number of days after thirty days. Create a single class and a program in main to output whether a user is supposed to pay or get blacklisted when he/she returns a book. Where the user is supposed to pay, the program should clearly state how much is to be paid. The number of days within which the book is being returned should be entered at runtime. The number of member data and member functions in the class should be based on your discretion.

Question Two

Create a class person with the following data members: *Name, Age* and *gender*. Add two no-argument member functions named *getData()* and *putData()* respectively. Implement *getData()* in such a way that, when called it allows user to input *Name, Age* and *gender* of a specific person. Implement *putData()* in such a way that, it displays whatever the user enters.

Derive two classes *patient* and *doctor* respectively from the class *person.* The *patient* class should contain *wardName* and *dateOfAdmission* as features (member data) unique to itself. The *doctor* class should contain *specialization* as features (member data) unique to itself.

Create objects of the derived classs and write a program in main which should allow users to input and output *Name, Age, gender, wardName* and *dateOfAdmission* of a patient or *Name, Age, gender* and *specialization* of a doctor.

Question Three

Cars passing by the booth are expected to pay a 50 cent toll. Mostly they do, but sometimes a car goes by without paying. The tollbooth keeps track of the number of cars that have gone by, and of the total amount of money collected. Model this tollbooth with a class called tollBooth. The two data items are a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both of these to 0. A member function called payingCar() increments the car total and adds 0.50 to the cash total. Another function, called nopayCar(), increments the car total but adds nothing to the cash total. Finally, a member function called display() displays the two totals.

Examiner: *W. A. Agangiba*