



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

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AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

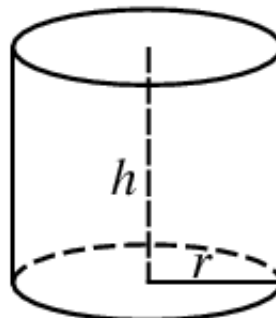
CMT 211: OBJECT ORIENTED PROGRAMMING II

Date: DECEMBER 2018

Duration: 2 Hours

**INSTRUCTIONS: Answer Question ONE and any other TWO Questions.
Calculators MAY be used in this Examination**

- Q1. i) Define the following terms; **(6 marks)**
i) Method overloading
ii) Local Variable:
iii) Instance Variable:
- ii) Discuss the role of the following java SDK components **(6 marks)**
i) Classloader:
ii) Bytecode Verifier:
iii) Security Manager:
- iii) Below is a cylindrical tank of radius r and height h . Write a method :



- a) `vol()` that receives the radius r and height h and return the volume

- of the cylinder in liters **(3 marks)**
- b) SurfArea () that receives the radius r and height h and return the surface area of the cylinder in m square. **(3 marks)**
- iv) Give any five significance of methods/functions in software developments. **(5 marks)**
- v) Give three differences that exist between Java and C++ **(3 marks)**
- vi) Java is a pure object-oriented programming language. Discuss. **(4 marks)**
- Q2. a) Refer to the methods you wrote in question 1 (iii) (a) and (b). Write a java program that uses the methods above to return the surface area and volumes of 15 cylinders whose radius must be between 160.5 cm and 125.0 cms and height is from 200cm and 160 cm and are all randomly generated in column form as shown below. **10 marks**
- | Radius | Height | Volume | Surface Area |
|--------|--------|--------|--------------|
|--------|--------|--------|--------------|
- b) Explain with java example program the use of any five Scanner class methods **(10 marks)**
- Q3. a) Draw the Flow chart that will generate 50 random integer number between -13 and 63 and print them only if they are even in columns of 10 . **(10marks)**
- b) Write the corresponding program **(10marks)**
- Q4. Consider a class **Employee** that can be used to generate a list of employees in an organization, employee payslip and sort the employees based on gender , number of years worked and retirement date.
- i) Explain the possible data members **(2 marks)**
- ii) Explain at least 6 get and 6 setter Methods **(10 marks)**
- iii) Write a method createEmployee() that returns an array of 20 employees **(8 marks)**
- Q5. a) Explain the use of the following keywords as used in java **(6 marks)**
- this.
 - supper.
 - transient :
 - Static Nested
- b) Discuss any **four** types of errors that might lead to an exception.**(8 marks)**
- c) Define the term exceptions and explain in details how they are managed in java. **(6 marks)**