EBS 289/289J
NATURE OF MATHEMATICS
30 MINUTES

DEPARTMENT OF MATHEMATICS AND ICT

FOUR-YEAR BACHELOR OF EDUCATION
SECOND YEAR FIRST SEMESTER COLLEGE-BASED QUIZ I, FEBRUARY 2021

FEBRUARY 12, 2021   **NATURE OF MATHEMATICS**

MARKING SCHEME

1. Which one of the following mathematicians is claimed to make the statement "***God is a Mathematician***"?
   A. Galileo
   B. Plato
   C. R. Skemp
   D. Sir James Jeans

2. Propositions regarding the undefined terms assumed to be self-evidently true are often referred to as . _____
   A. Conjectures
   B. Axioms
   C. Paradoxes
   D. Theorems

3. Richard Skemp's definition of Mathematics is _____.
   A. A way of thinking, and the thinking is about numbers.
   B. An abstract subject made up of symbols and other arbitrary elements.
   C. The most abstract and so the most powerful of all theoretical systems.
   D. The subject in which we never know what we are talking about nor whether what we are saying is true.

4. Which one of the following is among the "Five Common Notions" in the *Element*?
   A. An equal can be added to an equal
   B. An equal can be subtracted from an equal
   C. The whole is greater than any of its parts
   D. Things which coincide with one another are divisible

5. Any procedure carried out on one or more original values to generate a new value is generally referred to in mathematics as _____.
   A. Algorithm
   B. Axiom
   C. Conjecture

D. Operation

6. Who authored the book titled "*Elements*"?
   A. Aristotle
   B. Euclid
   C. Fermat
   D. Goldbach

7. *Counting all* principle involves_____.
   A. Counting objects for the first addend, counting objects for the second addend, and them counting all combined.
   B. Counting real objects for the first addend, and then finger count for the second addend.
   C. Just mentioning one of the addends and then finger counting for the second addend.
   D. Making collections of objects for the first addend, and for the second addend, and then combining.

8. Which one of the following statements is **always true** about <u>natural</u> numbers?
   A. Even numbers are exactly divisible by odd numbers.
   B. Even numbers leave no remainder when divided by 2.
   C. The sum of two odd numbers is a perfect number.
   D. The sum of two odd numbers is an even number.

9. Mathematics as a science of patterns and order has its domain to include_____.
   A. Numbers, chance and algorithm.
   B. Numbers, sound and predicate.
   C. Change, games and verbs.
   D. Algorithm, language and verbs.

10. Which one of the following is a group of people who view mathematics as *real*?
    A. Morris Kline, J.W.N. Sullivan and James Rees
    B. Richard Skemp, Bertrand Russell and Max Black
    C. Bertrand Russell, Marshall Stone and Max Black
    D. Richard Skemp, Max Black and Sullivan

11. An unproved proposition in mathematics that is believed to be true is termed _____.
    A. Algorithm
    B. Antinomy
    C. Axiom
    D. Conjecture

12. One of the highest values of mathematics, like science is its_____.
    A. abstractness
    B. openness
    C. preciseness
    D. proofs

Provide brief responses as possible to the following questions

13. What does the acronym **HMMDIA** stand for?   [**1 mark**]

     H – How
     M – Much
     M – More   **1mark**
     D – Do
     I – I
     A - Add

14. Identify the two types of mathematical paradoxes.   [**2 marks**]
    i.   **Phenomenological paradox**   **1mark**
    ii.   **Logical paradox**   **1mark**

15. The cube root of a number is defined as   [**2 marks**]
    one of the three equal factors a given number.   **2marks**

16. Identify the components of the cycle of mathematical investigations.   [**3 marks**]
    -    **Representation**   **1mark**
    -    **Manipulation**   **1mark**
    -    **Validation**   **1mark**

GOOD LUCK!!!