Roll No: [ ][ ][ ][ ][ ][ ][ ][ ][ ]

The Assam Royal Global University, Guwahati
Royal School Of Engineering & Technology
B.Tech. Civil Engineering 4th Semester
Semester End Examination, June 2023
Course Title: Materials, Testing & Evaluation
Course Code : CEE022C403

Time: 3 Hours   **Maximum Marks: 70**

Note: Attempt all questions as per instructions given.
The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all questions**. (Maximum word limit 50)   2 x 8

   a. What is Base?
   b. How would you describe vehicle in paint?
   c. How would you identify the elastic limit and plastic limit in mild steel?
   d. What is Tenacity?
   e. What do you understand by the term fatigue?
   f. What is the uses of coefficient of uniformity?
   g. What is Design Mix Concrete?
   h. If Maximum size of fine aggregate and coarse aggregate is 20mm and 40mm then find P_D.

Section – B

2. Attempt **any one** of the following: 12 x 1
   a. Explain the detailed composition of cement.

   b. Explain in detail the different types of cement that are used for construction of sewer line, mega city road network, underwater construction, extremely hot weather area and architectural work.

3. Attempt **any two** of the following: 7 x 2

   a. Describe Shrinkage of concrete. Also explain different type of shrinkage occur in concrete.
   b. Explain different methods of curing.
   c. Estimate the yield of concrete per bag of cement for a concrete mix proportion of 1:2:4. Also write a brief description on the Toughness and Hardness of cast iron

4. Attempt **any two** of the following: 7 x 2

   a. What is an adhesive? Mention the advantages and disadvantage of using adhesive in building construction
   b. Illustrate how linoleum, thermocol, heat insulating material and sound insulating materials are used in modern construction industry.
   c. Explain different physical properties of structural materials.

5. Attempt **any two** of the following: 7 x 2

    a. Differentiate between:
        i.   Impact Strength and toughness
        ii.   Elasticity and plasticity

    b. A steel bar of length 2m is fixed at both the ends at 20°C. The coefficient of thermal expansion is $11 \times 10^{-6}/°C$, $E = 2 \times 10^5 N/mm^2$. If the temperature decreased to 18°C then determine the nature of stress that will experience?

    c. A steel cable of 2cm diameter is used to lift a load of 500 л kg. If $E = 2 \times 10^6$ kg/ cm² and length of cable is 10 m. then the elongation of the cable due to load will be.