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BICE-001

B.Tech. Mechanical Engg. (BTMEVI) / B.Tech. Electrical Engg. (BTELVI) / B.Tech. Computer Science & Engg. (BTCSVI) / B.Tech. Civil Engg. (BTCLEVI) / B.Tech. Electronics and Communication Engg. (BTECVI)

Term-End Examination

00447 **June, 2017**

BICE-001 : ELEMENTS OF ENGINEERING SCIENCE

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any* ***seven*** *questions. Draw suitable diagrams wherever necessary.*

1. (a) List out the various Laws of Resistance. 5

(b) Explain the effect of temperature on resistance. 5

2. (a) Define Kirchhoff's Law. Explain its application in a network of conductors. 6

(b) Explain the terms voltage, current, potential difference and energy. 4

3. Discuss the role of a civil engineer as site engineer for a project. Explain different specializations of Civil Engineering. *10*

4. What is meant by reference meridians ? Explain different types of reference meridians. Describe a prismatic compass with a neat labelled sketch. *10*

5. Write the statements of the first and second laws of thermodynamics. Draw the Carnot cycle for heat engine, refrigeration and heat pump. *10*

6. Write the difference between two-stroke and four-stroke I.C. engines. Explain the system, process and cycle in a thermodynamic way. *10*

7. Explain clearly the different types of stresses and strains. Draw the stress – strain diagram for ductile materials. *10*

8. (a) What is the difference between rough grinding and precision grinding ? *6*

   (b) Distinguish between 'Soft solder' and 'Hard solder'. *4*

9. (a) What is a Representative Fraction ? *3*

   (b) What are the different types of scales ? Also explain the differences between a plain scale and a diagonal scale. *7*

10. Write short notes on any ***four*** of the following : $4 \times 2\frac{1}{2} = 10$

(a) Lime

(b) Modulus of Rigidity

(c) Power Saw

(d) Ideal Gas Equations

(e) Abrasives

(f) Non-ferrous Alloys