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BICE-001

00114

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

June, 2014

BICE-001 : ELEMENTS OF ENGINEERING SCIENCE

Time : 3 hours *Maximum Marks : 70*

*Note : Attempt **any five** questions. **Each** question carry **equal** marks.*

1. (a) State and explain Ampere's force law. 5

   (b) Write down KVL and KCL in point form. 5

   (c) Find the resistance of a round copper conductor having a length of one meter and a uniform cross-sectional area of 1 cm^2. The resistivity of copper is 1.724×10^{-8} Ωm 4

2. Attempt **all** parts.

   (a) What is basic principle of surveying ? Explain briefly the basic method of fixing position in horizontal plane. 7

   (b) Explain different methods of chaining on a sloping ground. Discuss the advantage and disadvantages of each method. 7

3. Attempt **any two** parts.

(a) Explain the working of four stroke engine with P-V and T-S diagram. 7

(b) Explain the three laws of thermodynamics. 7

(c) The wall of furnace is constructed from 15 cm thick fire brick having constant thermal conductivity of 1.7 w/mk. The two sides of the wall are maintained at 1400 K and 1150 K respectively. What is the rate of heat loss through the wall which is 50 cm × 3 m ? 7

4. (a) What do you understand by property of a system ? Distinguish between extensive and intensive properties of a system. 7

(b) Explain Newton's Law of cooling. 7

5. (a) Define the terms : 7

(i) Elasticity
(ii) Elastic limit
(iii) Young modulus and
(iv) Modulus of rigidity

(b) Differentiate among "antogeneous", "homogeneous" and "hetrogeneous" welding processes. 7

6. Attempt **all** parts.

(a) Sketch and explain working of a column and knee type milling machine. 7

(b) Explain briefly ten operations that can be done on the engine lathe. 7

7. Write short note on **any four** of the following : **3.5x4=14**

(a) Prismatic compass
(b) Lime
(c) Open System of Thermodynamics
(d) Stefen Boltzman's Law
(e) Ductility and Maleability