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**BICE-001**

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

**Term-End Examination**

**December, 2015**

**BICE-001 : ELEMENTS OF ENGINEERING SCIENCE**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) Explain Ohm's law and discuss the effect of temperature on resistance. 5
  - (b) Write a short note on conversion of energy theory. 5
  2. (a) Find the equivalent resistance when four resistors with resistances  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are connected in series and in parallel. 5
  - (b) Define Kirchhoff's laws. Explain their applications in the network of conductors. 5

3. (a) Explain different areas of civil engineering. 5  
(b) Explain different types of buildings and their components. 5
4. (a) Explain the graduations of a prismatic compass with a neat sketch. 5  
(b) Write a short note on the functions of a scale. Compare enlarging scale with reducing scale. 5
5. (a) Explain the role of a civil engineer as site engineer in the construction of a hydraulic dam. 5  
(b) Explain the sources of errors in a compass survey. 5
6. Write a detailed note on different types of bearings and meridians. 10
7. Explain the functioning of a four-stroke diesel engine with a suitable sketch. 10
8. (a) Explain the first and second laws of thermodynamics. 5  
(b) State and explain Fourier's law of heat conduction. 5

9. (a) Explain Carnot cycle and discuss how it could be applied for a Refrigerator cycle. 5
- (b) Draw the stress-strain curve for ductile and brittle materials and explain different points of interest for a design engineer. 5
10. (a) Draw the line diagram of a Milling machine and explain its functioning. 5
- (b) Write the composition and mechanical properties of low carbon steel, medium carbon steel and high carbon steel. 5
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