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

**Term-End Examination**

**June, 2013**

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

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any seven questions. All questions carry equal marks.*

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1. Explain Ohm's law and its limitations. What is the effect of temperature on resistance ? How can resistivity be expressed in Ohm - meter ? 10
2. What do you understand by an energy source and energy converter ? Give two examples of each. How is energy related to power ? Write the unit of power and energy. 10
3. Explain different specializations of Civil Engineering. Explain the role of Civil Engineers at different levels of a project. 10

4. What is meant by reference meridians ? Explain 10  
different types of reference meridian. Describe a  
prismatic compass with neat labelled sketch.
  5. Define the term 'plan', 'map' and 'R.F'. Explain 10  
types of bearings in brief.
  6. With a neat sketch explain the working of 4 - stroke 10  
diesel engine. Write the differences between two  
stroke and 4 stroke IC engines.
  7. Write the statement and equation of Newton's law 10  
of cooling. Explain process of heat exchange in  
lubricated roller bearings.
  8. Explain the term Drilling, Boring, Grinding and 10  
Milling. Discuss mechanical properties for steels  
and cast iron.
  9. Explain in short welding, soldering, casting and 10  
forging manufacturing processes.
  10. Write short notes (**any four**) : 2.5x4=10
    - (a) Potential difference
    - (b) Stress - strain curve for ductile material
    - (c) Local attraction in Civil Engineering Survey
    - (d) Components of a building
    - (e) Non ferrous alloys
    - (f) Ideal gas equations
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