

**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**

00063

**December, 2018**

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

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Attempt any **seven** questions. Draw suitable diagrams wherever necessary. All questions carry equal marks. Use of scientific calculator is allowed.*

1. Explain Kirchhoff's laws and their applications to simple circuit with examples. Write the units of power and work. 10
2. Discuss the concept of electricity. Explain the terms voltage, current, potential difference, power and energy. How is energy related to power ? 10

3. (a) Explain the role of a civil engineer as site engineer in the construction of a hydraulic dam. 4
- (b) With reference to prismatic compass, explain base line, tie line and check line. 6
4. (a) Write a short note on the functions of a scale. Compare enlarging scale with reducing scale. 5
- (b) Explain the different methods of chaining on a sloping ground. Discuss the advantages and disadvantages of each method. 5
5. Explain the functioning of a four-stroke diesel engine with a suitable sketch. 10
6. (a) What is meant by thermodynamic equilibrium ? How does it differ from thermal equilibrium ? 7
- (b) Define Stefan-Boltzmann law. 3
7. Explain the mechanical method and then graphical method of solution for three-point problem. 10

8. (a) Explain the different types of stresses and strains. 6
- (b) Define the following terms : 4
- (i) Elasticity
- (ii) Elastic Limit
9. (a) Differentiate between “autogeneous”, “homogeneous” and “heterogeneous” welding processes. 6
- (b) What is Sheet Metal Forming ? List the advantages and disadvantages of sheet metal forming process. 4
10. Write short notes on any **four** of the following :  $4 \times 2 \frac{1}{2} = 10$
- (a) Open System of Thermodynamics
- (b) Carnot Cycle
- (c) Ohm’s Law
- (d) Drilling M/C
- (e) Plaster of Paris
- (f) Brazing Process
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