

**B. TECH. MECHANICAL ENGG.  
(BTMEVI)/B. TECH. ELECTRICAL  
ENGG. (BTLEVI)/B. TECH. COMPUTER  
SCIENCE & ENGG. (BTCSVI)/B. TECH.  
CIVIL ENGINEERING (BTCLEVI)/  
B. TECH. ELECTRONICS & COM.  
ENGG. (BTECVI)**

**Term-End Examination**

**June, 2019**

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

*Time : 3 Hours*

*Maximum Marks : 70*

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*Note : Answer any seven questions. All questions  
carry equal marks. Use of scientific  
calculator is allowed. Assume the suitable  
data, if any.*

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1. (a) Find the resistance of round copper conductor having a length of 1.5 m and uniform cross-sectional area of  $1 \text{ cm}^2$ . The resistivity of copper is  $1.72 \times 10^{-8} \Omega\text{m}$ . 5

- (b) Describe the relationship between work, power and energy. 5
2. (a) Derive the expression for equivalent resistance when five resistors with resistance  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ , and  $R_5$  are connected in parallel and in series. 5
- (b) Describe the applications of Kirchhoff's voltage and current law. 5
3. (a) Explain the role of civil engineer as a site engineer. 5
- (b) Discuss briefly the various basic areas of civil engineering. 5
4. (a) What are base line, tie line, check line, offsets and plan ? 5
- (b) Explain the graduations of a prismatic compass with a neat sketch. 5
5. Describe the P-V representation of the various thermodynamic processes and cycles. 10
6. Explain the working of 2s and 4s petrol and diesel engines. 10

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7. Describe the various mechanical properties of cast iron, non-ferrous alloys and steel. 10
8. Define the following terms :  $4 \times 2 \frac{1}{2}$
- (a) Casting
  - (b) Milling
  - (c) Ranging
  - (d) Survey
9. What are the basic elements and working principle of a grinding machine with their different types of operations ? 10
10. Write short notes on any *four* of the following :  $4 \times 2 \frac{1}{2}$
- (a) Grinding M/c
  - (b) Non-ferrous alloys
  - (c) Offsets
  - (d) Local attraction
  - (e) Sheet metal cutting