

**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**

**December, 2016**

00193

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

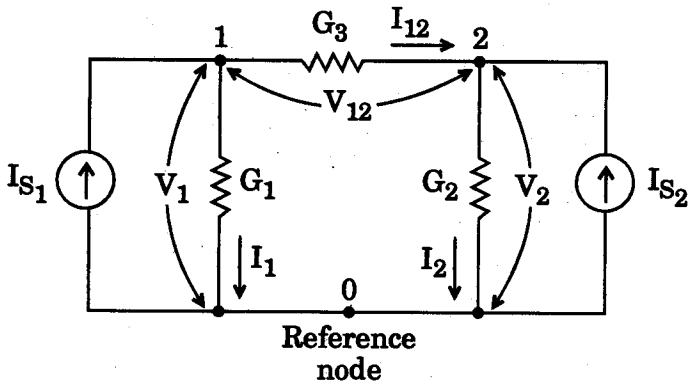
*Time : 3 hours*

*Maximum Marks : 70*

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

1. Consider the 2-node circuit given below and write the Kirchoff's Current Law (KCL) equation for the two nodes. Note that 0-node is the reference node.

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2. Explain the resistance in a series circuit with a neat sketch and derivations. Also give a list of the important rules of the series circuit. 10
3. What is meant by Magnetic bearing and True bearing ? Explain the various steps to observe the bearing of a survey line. 10
4. List out any six accessories required for horizontal measurement with a chain and give a brief account on those accessories. 10
5. (a) Give an account on the effect of infrastructure facilities. 5
- (b) Explain the role of civil engineers in the infrastructure development. 5
6. (a) What are the steps involved in the design of a machine element ? 5
- (b) Draw a neat sketch of stress – strain diagram of ductile materials and explain the various limits in that. 5
7. (a) Explain the working of two-stroke and four-stroke engines. 6
- (b) Make a table and compare the advantages and disadvantages of two-stroke and four-stroke engines. 4

8. Give an account of the following in regard to the second law of thermodynamics : 10
- (a) Clausius statement
  - (b) Kelvin-Planck statement
  - (c) Equivalence of Clausius statement to the Kelvin-Planck statement
9. (a) Explain the process of Forging as a manufacturing method and write a note on its application. 5
- (b) What are the advantages and disadvantages of Forging method ? 5
10. Write short notes on the following : 10
- (a) Pillar Drilling Machine
  - (b) Column Drilling Machine
  - (c) Radial Drilling Machine
  - (d) CNC Column Drilling Machine
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