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BICE-001

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

00076

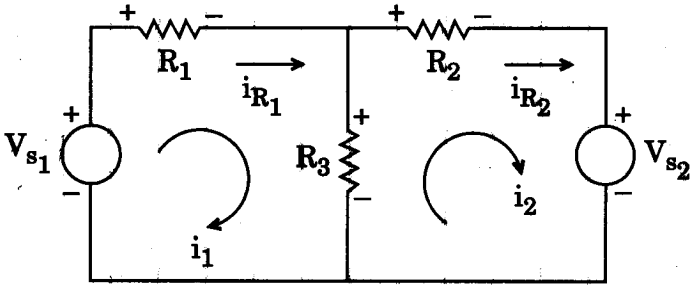
June, 2016

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-mesh network shown below and express the currents in the three resistances. Also write the Kirchhoff's Voltage Law (KVL) equation. *10*



2. Explain the resistance in a parallel circuit with a neat sketch and derivations. Also give a list of the important rules of parallel circuits. *10*

3. Define the following terms : $4 \times 2\frac{1}{2} = 10$

   (a) Base Line

   (b) Tie Line

   (c) Check Line

   (d) Offsets

4. Give some features of the prismatic compass, and explain the working and uses of the compass. *10*

5. List out any five basic fields of Civil Engineering and give a brief account on the scope of each field. *10*

6. Write a brief account on the following types of buildings and their various basic components : *10*

   (a) Residential buildings

   (b) Commercial buildings

   (c) Industrial buildings

7. (a) Give the equation of state for a perfect gas. *3*

   (b) Explain the Carnot cycle for heat engine with a neat sketch of Carnot engine cycle and Carnot heat pump cycle. *7*

8. (a) Define Stefan-Boltzmann's law. *3*

(b) Explain the basic idea of I.C. engines and make a list of

(i) parts common to both petrol and diesel engines,

(ii) parts specific to petrol and diesel engines. *7*

9. Write short notes on any ***five*** of the following mechanical properties of engineering materials : *5×2=10*

(a) Ductility

(b) Elasticity

(c) Plasticity

(d) Stiffness

(e) Resilience

(f) Toughness

(g) Brittleness

10. (a) Explain the various guidelines with regard to design of welded assemblies. *5*

(b) What is meant by Milling ? Explain Peripheral milling and Face milling. *5*