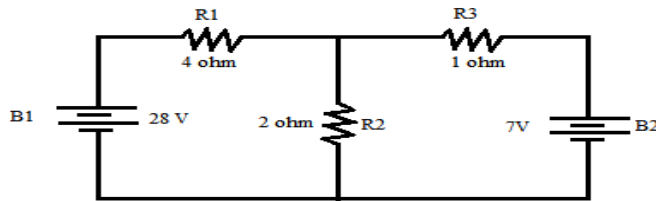




- c) Explain the basic idea behind the global positioning system. (03)
- Q-4 Attempt all questions (14)**
- a) State Newton's laws of motion. (06)  
Explain conservative and non conservative forces with the help of examples.
- b) State the work energy theorem and give its proof. (03)
- c) Explain the concept of conservation of linear momentum. (05)
- Q-5 Attempt all questions (14)**
- a) Explain the concept of rocket propulsion based on the system of variable masses and hence determine the final velocity of a rocket. (08)
- b) Explain briefly the angular momentum of a rigid body and hence explain the law of conservation of angular momentum. (06)
- Q-6 Attempt all questions (14)**
- a) Explain briefly the various modulus of rigidity. (07)
- b) Explain the Torsional pendulum. (07)
- Q-7 Attempt all questions (14)**
- a) State the postulates of special theory of relativity. (02)
- b) Define self and mutual inductance. (05)  
Derive the relation  $M = \sqrt{L_1 L_2}$
- c) Explain the concept of length contraction. (07)
- Q-8 Attempt all questions (14)**
- a) Based on the mesh current method; determine the currents  $I_1$  and  $I_2$  for the circuit given below. (04)



- b) Explain the working of a transformer and explain its different types. (05)
- c) Explain the concept of centre of mass and derive its formula for a two body system having equal masses. (05)

