**Question Bank of Unit-1**

1. Explain the principles of electro-mechanical energy conversion in rotating machines.
2. Write short notes on the following:  
   (i) Singly excited system.  
   (ii) Doubly excited system.
3. What do you mean by “energy “& “co-energy” in magnetic system? Also mention its importance.
4. Give the physical concept of the following:  
   (i) flux density wave sinusoidally distributed in space.  
   (ii)pulsating stationary flux.
5. Describe the advantage of providing field winding on the rotor & armature winding on the stator in case of large 3Ф synchronous machines.
6. Derive the following relation for field energy.  
   Wf= where λ= flux linkage
7. Derive the relation for mechanical force developed for voltage control system.
8. For a certain relay , the magnetization curves for open & closed positions of the armature are linear. If the armature of the relay moves from open to closed positions at constant current show that the electrical energy input is shared equally between field energy stored & mechanical work done.
9. For a singly excited magnetic system, establish relationship between magnetic field energy & co-energy in terms of reluctance & permeance.(2012)
10. Explain the flow of energy in electro-mechanical devices with a suitable model & write energy balance equation. (2012)