MEPS/MTPA/MEHP/MTPS-103
M.E./M.Tech., I Semester
Examination, December 2014
Advance Power System Protection Relays

Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions.All questions carry equal marks.

1. a) Explain the principle of operation of distance relays and discuss the effect of power swing and fault impedance on distance relay.

   b) Explain the working of a reverse power relay.

2. a) Draw the block diagram of Static relay and explain various functional blocks with individual circuits.

   b) Explain the different types of amplitude and phase comparators with neat sketches.

3. What are the abnormal conditions in a large alternator against which protection is necessary? Explain.

4. Explain the carrier system of protection. With the block diagram and neat sketches discuss how the phase comparison scheme can be used for protecting a transmission line.

5. a) Describe the salient features and applications of directional wave detection relay.

   b) Explain high impedance bus differential scheme for bus bar protection.

6. What are the advantages of digital protection? Describe with block diagram the principle of operation of a microprocessor based percentage differential relay scheme for the operation of a power transformer.

7. Derive the generalized mathematical expression for distance relays and realize the various types of distance relays using microprocessor based approach.

8. Write short notes on any two of the following:
   a) Algorithm for transformer protection.
   b) Salient features of 500 kV relaying protection.
   c) Three winding transformer protection
   d) Hall effect comparator.