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**M. TECH.**  
**(SEM-II) THEORY EXAMINATION 2017-18**  
**Advanced Protecting Relaying**

*Time: 3 Hours*

*Total Marks: 100*

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

- 1. Attempt *all* questions in brief. **2 x 10 = 20****
- a. Explain the basic element of the static relay.
  - b. What is I.D.M.T Characteristics of a relay.
  - c. Write short note on thermal relay.
  - d. Write short note on reactance relay.
  - e. Write short note on under and over frequency relay.
  - f. What is comparator in protective relay.?
  - g. State the disadvantages of basic impedance relay.
  - h. Discuss the type of faults encountered in transformers.
  - i. Write the advantages of digital relays.
  - j. Explain operation of basic trip circuit.

**SECTION B**

- 2. Attempt any *three* of the following: **10 x 3 = 30****
- a. Explain the protective schemes employed to protect formulating and switching effects
  - b. Classify various type of over current relay. Give their application along with characteristics.
  - c. Explain the importance of protective scheme employed in power system.
  - d. What is comparator in a protective relay? Derive general equation for amplitude comparator.
  - e. What is zone of protection? Discuss various zone of protection of a power system with help of line diagram.

**SECTION C**

- 3. Attempt any *one* part of the following: **10 x 1 = 10****
- (a) What are different types of fault occurring in power system. Explain in brief.
  - (b) Explain in detail multi-input comparator with block diagram.
- 4. Attempt any *one* part of the following: **10 x 1 = 10****
- (a) Write the essential qualities of protective relay..
  - (b) Explain the principle of operation of Microprocessor based over current relay with suitable diagram.

5. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Explain the implementation of over current relay using induction disk.
  - (b) Write short note on following terms related to protective relaying.  
(i) protective scheme (ii) protective system (iii) plug-setting multiplier (iv) Trip circuit.
6. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) How logic gate applied in protective relay? Explain clearly relay logic with help of logic gate.
  - (b) Explain the principle of operation of digital relay. Explain the various component with the help of suitable diagram.
7. **Attempt any *one* part of the following:** **10 x 1 = 10**
- (a) Explain the working and application of Buchholz Relay .
  - (b) Describe with the help of neat sketches the setup of carrier current relaying employed in transmission line protection.