

(3 Hours)

[ Total Marks : 80

- N.B. :** (1) Question 1 is compulsory.  
 (2) Solve any **three** questions from remaining **five** questions  
 (3) **Figures to the right indicate full marks**

1. Answer the following questions. 20
  - (a) Where and why isolators, contactors and circuit breakers are used in power system.
  - (b) What are the difficulties associated with differential protection.
  - (c) Explain loss of excitation in case of generator.
  - (d) Explain properties of SF 6 gas that make it suitable for arc quenching
  
2. (a) What are the different types of fuse available. Explain the constructional detail of HRC fuse with its advantages over other types. 10  
 (b) Explain working principle of Vacuum circuit breaker with its advantages and disadvantages. 10
  
3. (a) Explain with neat diagram the construction and working of MOCB. 10  
 (b) Explain the high resistance and low resistance method of arc quenching with the types of circuit breakers in which these techniques are used. 10
  
4. (a) Explain how backup protection is achieved in a distance relay using step distance characteristics. 10  
 (b) Explain briefly the different kinds of electromagnetic relays with their application. 10
  
5. (a) State various abnormal conditions of induction motor. Explain motor protection against single phasing. 10  
 (b) What do you understand by incipient faults. How transformers can be protected against these faults. 10
  
6. (a) Differentiate between static and electromagnetic relays. 10  
 (b) Explain REF protection for alternator. How 100% winding is protected in an alternator. 10