Duration – 3 Hours **Total Marks – 80**

N.B.:- (1) Question No.**1** is compulsory.
(2) **Attempt** any **three** questions out of remaining **five** questions.
(3) Assume suitable data if necessary and justify the same.

Q 1. Answer the following questions. **20**
a) Explain the role of protective relaying in the power system.
b) Explain the difficulties in current differential protection.
c) Explain the working of the under frequency relay.
d) Explain high resistance arc interruption method..

Q 2. a) Explain the construction, working principle and operation of Vacuum circuit breaker. **10**
b) Differentiate between static and electromagnetic relay. **10**

Q 3. a) Explain the construction and working principle of SF_6 circuit breaker with neat sketch. **10**
b) Draw and explain single line diagram of a typical substation and indicate the location of different switchgear and protecting devices. **10**

Q 4. a) Describe the differential protective scheme for star - delta connected transformer. **10**
b) Describe the protective schemes employed for the protection against overload and winding temperature of induction motor. **10**

Q 5. a) Describe the bus zone protection in detail. **10**
b) Explain the types of protective schemes employed for the protection of transmission line. **10**

Q 6. Write a note on **Any Two** **10*2**
a) Numerical Relay
b) Bus bar Protection
c) Phase comparison carrier current protection.

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