

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) Compare static relay with electromagnetic relay.
  - B) Explain the meaning of time grading and current grading protection system.
  - C) Explain making and braking capacity of circuit breaker.
  - D) Compare fuse with circuit breaker.
- Q 2 a)** Explain TRV and RRRV. Derive an expression for restriking voltage. **10**
- Q 2 b)** Explain concept of phasor measurement unit and its use. **10**
- Q 3 a)** Explain with neat diagram the construction and working of SF<sub>6</sub> Circuit Breaker. **10**
- Q 3 b)** Explain with neat diagram the working of harmonic restraint relay. **10**
- Q 4 a)** Explain rotor side protection for generator. **10**
- Q 4 b)** Explain power line carrier communication used for protection of transmission line. **10**
- Q 5 a)** Explain in detail the difference between impedance relay, reactance relay with the help of their characteristic. **10**
- Q 5 b)** Draw and explain the construction and working of pantograph isolator. Explain why isolator cannot be operated on load. **10**
- Q 6 a)** Explain the constructional details of HRC fuse. How arc is extinguished in HRC fuse? **10**
- Q 6 b)** Explain in over reach & under reach in impedance relay and state the measure to overcome it. **10**

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