

Code: EE5T3

**III B.Tech - I Semester – Regular Examinations - November 2015**

**SWITCH GEAR PROTECTION AND CARRIER  
COMMUNICATION  
( ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain the necessity of protection for electrical power systems. 7 M
- b) Explain the essential qualities of protective relaying. 7 M
2. a) Explain principle of operation and construction of induction cup relay. 7 M
- b) With the help of block diagram briefly explain static relays. 7 M
3. a) Classify over current relays as per current-time characteristics. 7 M
- b) Explain differential relays. 7 M
4. a) Briefly explain about under voltage relay. 7 M
- b) Briefly write about mho relay. 7 M

5. a) With a neat sketch, explain how percentage differential protection is applied for generator. 9 M
- b) A 30MVA, 3- $\phi$ , 11KV, star connected generator is protected by percentage differential protection, where relay picks up when secondary current of CT exceeds 5A, CT ratio is 1000/5. Determine the neutral grounding resistance of generator to protect 85% of stator winding. 5 M
6. a) List the disadvantages of using ungrounded systems. 7 M
- b) Write in detail about three zone protection of lines. 7 M
7. Explain how transmission lines are protected against over voltages. 14 M
8. With a neat sketch explain operation of air blast circuit breakers. 14 M