

**Ganpat University**  
**M. Tech. Semester: II (Electrical Engineering)**  
**Regular Examination May/June-2014**  
**3EE203: Modern Power System Protection**

Time: 3 Hours

Total Marks: 70

- Instruction:**
1. Answer each question very precisely.
  2. Assume suitable data whenever required and mention it clearly.
  3. Write Section-I and Section-II in separate answer book.

## Section - I

- Que. - 1** Answer the following questions. 12
- (a) What are the causes and consequences of fault on power system?
  - (b) Explain how the protection zone of various equipments is decided.
  - (c) What do you mean by primary and backup protection of power system?
- OR
- Que. - 1** Define the following terms with reference to overcurrent relay. 12
- (a) (i) Plug setting (ii) Multiple of Pick-up current
  - (b) (iii) Time Dial Setting (iv) Reach of the relay
  - (c) (v) Overreach of the relay (vi) Underreach of the relay
- Que. - 2** Enlist the various requirements of protection system. 11
- OR
- Que. - 2** Discuss various components of digital relay used in power system. 11
- Que. - 3** Discuss various merits and demerits of digital relay with reference to electromechanical relays. 12

## Section - II

- Que. - 4** Discuss half-cycle and full-cycle discrete Fourier transform algorithm. 12
- OR
- Que. - 4** Answer the following questions. 12
- (a) Why are the settings of ground relays lower than the phase relays?
  - (b) What do you mean by dead zone with reference to directional relay?
  - (c) Explain how backup protection is achieved in a distance relay using step distance characteristics.
- Que. - 5** (a) Explain the concept of magnetizing inrush current in a power transformer. 11  
 (b) Discuss the biased differential protection of a generator with percentage characteristic.
- OR
- Que. - 5** (a) Explain with diagram the high impedance bus differential protection scheme. 11  
 (b) Discuss various abnormal conditions of an induction motor and their causes and consequences.
- Que. - 6** Attempt following Questions. 12
- (a) Discuss various advantages of auto-reclosing with respect to power system.
  - (b) What is the function of synchronizing check relay? Also discuss one method.

END OF PAPER

*Best Wishes*