No. of Printed Pages : 3

BIEEE-006

DIPLOMA IN ELECTRICAL ENGINEERING

(DELVI)

00015

Term-End Examination

June, 2014

BIEEE-006 : SWITCHGEAR AND PROTECTION

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any* ***seven*** *questions. All questions carry equal marks.*

1. Explain the basic difference between a CT used for instrumentation and a CT used for protection. Explain CT burden. How is it specified ? *10*

2. What are the different types of electromagnetic relays ? Discuss their field of applications. What are the advantages of static relays over electromagnetic relays ? *10*

3. In what way is distance protection superior to overcurrent protection for the protection of transmission lines ? What are the different types of distance relays ? Discuss their field of applications. *10*

4. What is Buchholz relay ? Which equipment is protected by it ? For what types of faults is it employed ? Discuss its working principle. *10*

5. In a 132 kV system, the reactance per phase upto the location of the circuit breaker is 5 Ω and capacitance to earth is 0·03 μF. Calculate :
   (a) the maximum value of restriking voltage,
   (b) the maximum value of RRRV and
   (c) the frequency of transient oscillations. *10*

6. What are the different methods of testing of circuit breakers ? Discuss their merits and demerits. Which method is more suitable for testing the circuit breakers of large capacity ? *10*

7. What are the considerations in selecting a fuse for
   (i) Transformer protection
   (ii) Motor protection
   (iii) Capacitor protection
   (iv) Heaters
   (v) Lighting loads *10*

8. Differentiate between surge diverter and surge absorber. What are the characteristics of an ideal surge diverter ? Describe the protection of stations and sub-stations against direct lightning strokes. *10*

9. An 11 kV, 100 MVA generator is grounded through a resistance of 6 Ω. The CTs have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1 A. What percentage of the generator winding will be protected by the percentage differential scheme of protection ? *10*

10. Discuss the limitations of wire pilot protection. What type of pilot is used for the protection of EHV and UHV transmission lines ? *10*
