No. of Printed Pages : 3

BIEEE-006

DIPLOMA IN ELECTRICAL ENGINEERING

(DELVI)

00325

Term-End Examination

December, 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 nature and causes of faults. Discuss the consequences of faults on a power system. What is a linear coupler ? Where is it used ? *10*

2. Discuss the working principle, types and applications of thermal relays. Explain what are amplitude and phase comparators. *10*

3. What are the various overcurrent protective schemes ? Discuss their merits, demerits and fields of application. Discuss a protective scheme for parallel feeders. *10*

4. What is an angle impedance relay ? Discuss how its characteristic is realised using the phase comparison technique. What is the difference between a Polarised MHO and a Simple MHO relay ? *10*

5. What are the switched distance relaying schemes ? Describe them in brief. What are the advantages of auto-reclosing ? *10*

6. An 11 KV, 100 MVA generator is provided with a differential scheme of protection. The percentage of the generator winding to be protected against phase to ground fault is 80%. The relay is set to operate when there is 15% out of balance current. Determine the value of the resistance to be placed in the neutral to ground connection. *10*

7. Discuss the protection employed against loss of excitation of an alternator. Are the protective devices employed for the protection of an alternator against (i) over voltage, (ii) over speed (iii) motoring ? Discuss them in brief. *10*

8. The short-circuit current of a 132 KV system is 8000 A. The current chopping occurs at 2·5% of peak value of the current. Calculate the prospective value of the voltage which will appear across the contacts of the circuit breakers. The value of stray capacitance to the earth is 100 μF. *10*

9. Discuss the problem associated with the interruption of (a) low inductive current, (b) capacitive current and (c) fault current if the fault is very near to the substation. *10*

10. Write short notes on the following : *10*

(i) Rod gap

(ii) Arcing horns

(iii) Ferranti surge absorber

(iv) Basic impulse insulation level

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