

**B.Tech. – VIEP – ELECTRICAL ENGINEERING
(BTELVI)**

00036

**Term-End Examination
June, 2016**

BIEE-023 : SWITCHGEAR AND PROTECTION

Time : 3 hours

Maximum Marks : 70

Note : Attempt any seven questions. Each question carries equal marks. Use of scientific calculator is permitted.

1. How does high vacuum help in interrupting the arc ? Explain the constructional features of a vacuum circuit breaker. 10

2. What are the different tests carried out to prove the ability of a circuit breaker ? State the difference between 'type tests' and 'routine tests'. 10

3. How are lightning diverters different from surge absorbers ? Explain with neat sketches. 10

4. What are the different causes of over voltages in a power system ? Explain any two causes in detail. 10

5. Explain protective zones for a power system. What is the significance of primary and back-up protection? 10
6. What are the different types of distance relays? Explain any one of them with a neat diagram and R-X characteristics. 10
7. The neutral point of a three-phase 20 MVA, 11 kV alternator is earthed through a 5Ω resistance, the relay is set to operate when there is an out of balance current of 1.5 A. The CTs have a ratio of 1000/5. What percentage of winding is protected against an earth fault? 10
8. Explain the construction and working of Buchholz relay with the help of neat sketches. 10
9. Write short notes on any *two* of the following : $2 \times 5 = 10$
- (a) MCCB
 - (b) BIL
 - (c) PC based relays
 - (d) Differential protection of bus-bars
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