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BIEE-023

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

Term-End Examination

00613 **December, 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 allowed.*

1. What are the different causes of over voltage in a power system ? Explain in detail. *10*

2. Describe the different types of static relays. Discuss the use of transistors as static relays. *10*

3. Classify the types of over current relays and give their applications along with their approximate characteristics. *10*

4. Show that a travelling wave moves along an overhead line with the velocity of light and its speed is proportional to $\frac{1}{\sqrt{\varepsilon_r}}$ in case of a cable with dielectric material of relative permittivity ε_r. *10*

5. Describe the principle of arc extinction in an oil circuit breaker with reference to restriking and recovery voltage. *10*

6. (a) Explain with a neat circuit diagram the pilot wire protection used for transmission line. *5*

   (b) Write various factors affecting the different insulation levels. *5*

7. What is the need of directional relay ? Explain the basic principle of directional relay. *10*

8. Explain different protection schemes for power transformers. *10*

9. Write short notes on any ***two*** of the following : *2×5=10*

   (a) Distance Relay

   (b) Testing of Circuit Breaker

   (c) Travelling Waves

   (d) Neutral Earthing