# BTELVI

Term-End Examination

June, 2012

## BIEE-018 : HIGH VOLTAGE ENGINEERING

*Time : 3 hours*                                *Maximum Marks : 70*

*Note :   Answer **any seven** questions.*

1.  (a)   Describe with neat diagram a three stage      **5**
          Cascaded transformer.

    (b)   Define the terms :                            **5**
          (i)    Impulse voltage
          (ii)   Chopped wave
          (iii)  Impulse flash over voltage
          (iv)   Impulse puncture voltage
          (v)    Impulse ratio for flash over

2.   Describe the construction, principle of operation   **10**
     and application of a multistage Marx's Surge
     Generator.

3.   Explain clearly the procedure for measurement of :   **10**
     (a)   impulse
     (b)   a.c. high voltages using sphere gap

4. Discuss and compare the performance of : **10**

   (a) Resistive.

   (b) Capacitance potential dividers for measurement of impulse voltages.

5. (a) What are partial discharges ? Differentiate **5** between internal and external discharges.

   (b) A 20 kV, 50 Hz schering bridge has a **5** standard capacitance of 106 $\mu$F. In a test on bakelite sheet balance was obtained with a capacitance of 0.35 $\mu$F in parallel with a non-inductive resistance of 318 ohms, the non-inductive resistance in the remaining arm of the bridge being 130 ohms. Determine the equivalent series resistance and capacitance and the P.f of the test specimen.

6. Explain briefly various tests to be carried out on a **10** circuit breaker.

7. (a) Discuss various factors which affect break **5** down of gases.

   (b) State and Explain Paschen's law. **5**

8. Explain briefly various theories of break down in **10** liquid dielectrics.

9. (a) What are 'Treeing' and 'Tracking' ? Explain clearly the two processes in solid dielectrics. 5

   (b) What do you mean by 'intrinsic strength' of a solid dielectric ? 5

10. Write short note on *any two* of the following : 2x5=10

    (a) Corona discharge

    (b) Electrostatic Voltmeter

    (c) Suspended particle mechanism in liquid dielectric break down.