

**DIPLOMA IN - VIEP-ELECTRICAL
ENGINEERING**

Term-End Examination

June, 2012

**BIEE-034 : ELECTRICAL POWER TRANSMISSION
AND DISTRIBUTION**

Time : 2 hours

Maximum Marks : 70

Note : All the questions are to be answered in English Language only. Question No. 1 is compulsory. Four questions are to be attempted out of question No. 2 to 8. Use of calculator is allowed.

1. (a) Large industrial consumers are supplied power at : **7x2=14**
- (i) 400 KV (ii) 11 KV
(iii) 66 KV (iv) 132 KV
- (b) The underground system cannot be operated above :
- (i) 220 KV (ii) 66 KV
(iii) 33 KV (iv) 11 KV
- (c) For Transmission of power over a distance of 500 km the transmission voltage should be in the range of :
- (i) 11-22 KV (ii) 33-66 KV
(iii) 66 KV-110 KV (iv) 132-220 KV
- (d) Stringing Chart is useful :
- (i) for finding the sag in the conductor
(ii) in the design of tower
(iii) in the design of insulator ring
(iv) finding distance between tower

- (e) To Reduce Corona effect :
 - (i) distance between conductor is reduced
 - (ii) the conductor diameter is reduced
 - (iii) bundled conductors are used
 - (iv) stranded conductors are used
- (f) The dielectric strength of air under normal conditions is around :
 - (i) 30 KV/cm (ii) 100 KV/cm
 - (iii) 150 KV/cm (iv) 200 KV/cm
- (g) While laying 11 kV underground cables the minimum bending radius must be :
 - (i) 3 D (ii) 6 D
 - (iii) 12 D (iv) 18 D

where D is diameter of cable.

- 2. (a) Define Power factor. What are the disadvantages of low Power factor ? 7
- (b) What are the methods of earthing ? 7
- 3. (a) Define tariff. Describe different types of tariff. 7
- (b) The yearly consumption of a factory is 50 Lakhs units, a maximum demand costs Rs.100 per KW. Calculate the cost of energy in one year if the energy is charged at : 7
 - (i) 75 paisa per unit
 - (ii) flat rate of Rs.12 per unit

4. (a) What are the faults in cables ? Write Varley loop test to find fault in cable ? 7
- (b) What is the difference between symmetrical and unsymmetrical fault ? What is Line to line fault ? 7
5. (a) What is Substation ? Classify Substation. 7
- (b) What is Grid Substation ? Write various equipments in substation. 7
6. (a) Draw a layout of Primary and Secondary distribution. 7
- (b) Derive the formula of Dielectric Stress of a Single Core Cable and economical size. 7
7. (a) What is HV DC Transmission ? Draw a layout and describe the advantages of HV DC Transmission. 7
- (b) A 20 km single phase transmission lines delivers 3000 KVA at 0.8 p.f. leading at a voltage of 11 KV. The impedance of the line is $(0.15 + j 0.4) \Omega/\text{KM}$. Find :
- (i) Sending end Voltage
- (ii) Percentage Voltage regulation
- (iii) Sending end Power factor
- (iv) Transmission efficiency

8. Write short note on *any four* of the following :

$4 \times 3\frac{1}{2} = 14$

- (a) Mechanical Components of overhead lines
 - (b) Importance of Sag and effect of Ice and Wind on Sag
 - (c) String efficiency
 - (d) Insulators used in Transmission lines
 - (e) Need of Circuit Breaker in substation
 - (f) Difference between Circuit Breaker and fuse
-