

**DIPLOMA IN ELECTRICAL ENGINEERING
(DELVI)**

Term-End Examination

June, 2017

00574

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

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Attempt any four questions from the rest. Use of scientific calculator is allowed.*

1. Attempt the following objective type questions : $7 \times 2 = 14$

- (a) Which portion of the transmission system is more prone to fault ?
- (i) Alternator
 - (ii) Transformer
 - (iii) Overhead lines
 - (iv) Underground cables
- (b) The highest transmission voltage in India is
- (i) 765 kV
 - (ii) 400 kV
 - (iii) 66 kV
 - (iv) 132 kV

- (c) In an HVDC system, there is
- (i) charging current but no skin effect
 - (ii) no charging current but skin effect
 - (iii) neither charging current nor skin effect
 - (iv) both charging current and skin effect
- (d) Which of the following equipments is **not** installed in a substation ?
- (i) Power transformer
 - (ii) Shunt capacitor
 - (iii) Lightning arrester
 - (iv) Exciter
- (e) Domestic consumers are usually charged on the basis of
- (i) Flat demand tariff
 - (ii) Flat rate tariff
 - (iii) Block rate tariff
 - (iv) Off peak tariff
- (f) Power factor can be improved by using
- (i) Static capacitors
 - (ii) Phase advancers
 - (iii) Synchronous condensers
 - (iv) All of the above

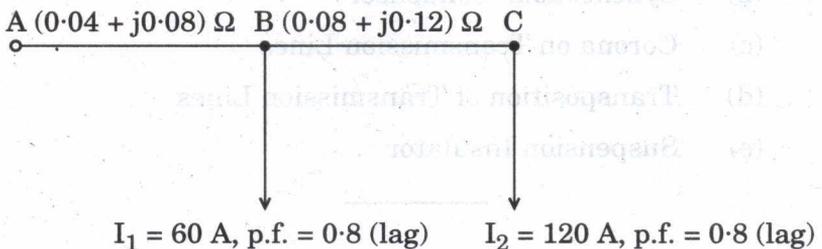
(g) The most common type of fault is

- (i) LG
- (ii) LL
- (iii) LLG
- (iv) LLLG

2. (a) Draw a single line diagram of a typical power system. Locate various sections of it and mention these on typical voltage of generation, transmission and distribution. 7

(b) What is the principle of HVDC system operation ? Discuss the technical and economic advantages of HVDC over HVAC system. 7

3. A 2-wire feeder ABC had a load of 120 A at C and 60 A at B, both at 0.8 p.f. lagging. The impedance AB is $(0.04 + j0.08) \Omega$ and that of BC is $(0.08 + j0.12) \Omega$. If the voltage at the far end C is to be maintained at 400 V, determine the voltage at A and B. 14



4. (a) What are the differences between outdoor and indoor sub-stations ? 7
- (b) Describe a 220/132 kV grid sub-station with the help of its complete layout. 7
5. (a) What are the common types of faults in overhead transmission lines ? Briefly explain each of them. 7
- (b) Explain the testing procedure for the determination of faults in underground cables. 7
6. Describe the following methods of tariff : $4 \times 3 \frac{1}{2} = 14$
- (a) Two Part Tariff
- (b) Block Rate Tariff
- (c) Maximum Demand Tariff
- (d) Flat Rate Tariff
7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Significance of Earthing
- (b) Synchronous Condenser
- (c) Corona on Transmission Lines
- (d) Transposition of Transmission Lines
- (e) Suspension Insulator
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