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BIEE-034

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

00513

December, 2016

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 : *7×2=14*

(a) A short circuit current is identified by

(i) heavy current flow

(ii) voltage rise

(iii) voltage drop

(iv) None of these

(b) Which of the following is usually ***not*** the generating voltage ?

(i) 6·6 kV

(ii) 9·9 kV

(iii) 11 kV

(iv) 13·2 kV

(c) HVDC transmission needs

(i) d.c. generators

(ii) a.c. filters

(iii) pulse converters

(iv) d.c. filters

(d) For cost and safety, the outdoor substations are employed for voltages

(i) 11 kV and above

(ii) 33 kV and above

(iii) 66 kV and above

(iv) 110 kV and above

(e) Two part tariff is charged on the basis of

(i) connected load

(ii) units consumed

(iii) maximum demand

(iv) Both (i) and (ii)

(f) Static capacitors for power factor improvement are rated in terms of

(i) kVAR

(ii) kVA

(iii) kW

(iv) kWh

(g) The most common type of fault is

(i) LG

(ii) LL

(iii) LLG

(iv) LLLG

2. (a) Compare overhead line with underground cables as a medium of power transmission. 7

(b) Derive an expression for sag of a line supported between two supports of the same height. 7

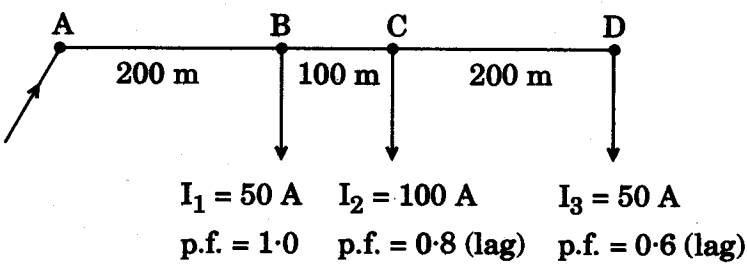
3. A single-phase a.c. distributor, 500 m long, has a total impedance of (0·02 + j 0·04) Ω and is fed from one end at 250 V. It is loaded as under :

(a) 50 A at unity p.f. 200 m from feeding point

(b) 100 A at 0·8 p.f. lagging 300 m from feeding point

(c) 50 A at 0·6 p.f. lagging at the far end

Calculate the voltage drop and voltage at the far end. *14*



4. Draw the complete layout of a 33/11 kV distribution substation. Explain the function of its various equipments and accessories. *14*

5. (a) What are the causes and disadvantages of low power factor ? *7*

(b) Explain the methods of power factor improvement. *7*

6. (a) What is the purpose of earthing ? Distinguish between system earthing and equipment earthing. 7

(b) Explain the voltage transformer earthing in detail. 7

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Two Part Tariff

(b) Pole Mounted Substation

(c) HVDC Transmission Line

(d) String Insulator

(e) Corona on Transmission Line