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No. of Printed Pages : 4

BIEE-034

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

December, 2015

BIEE-034 : ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any* ***five*** *questions. Question no.* ***1*** *is* ***compulsory****. Use of scientific calculator is allowed.*

1. Attempt the following objective type questions : *7×2=14*

(a) Which of the following is ***not*** a transmission voltage in India ?

(i) 66 kV

(ii) 132 kV

(iii) 264 kV

(iv) 400 kV

(b) Alternating current power is transmitted at high voltage to

(i) Safeguard against pilferage

(ii) Minimise transmission losses

(iii) Reduce cost of generation

(iv) Make system reliable

(c) Out of the following distribution systems, which system offers best economy ?

(i) Direct current system

(ii) AC single-phase system

(iii) AC 3-ϕ 3-wire system

(iv) AC 3-ϕ 4-wire system

(d) Isolators are used to disconnect a circuit when

(i) the line is on full load

(ii) the line is energised

(iii) the circuit breaker is not open

(iv) there is no current in the line

(e) The sag of a transmission line is least affected by the

(i) self-weight of conductor

(ii) temperature of surrounding air

(iii) current through conductor

(iv) ice deposited on conductor

(f) The service mains connects

(i) distributor and consumer terminal

(ii) distributor and transformer

(iii) distributor and relay system

(iv) transformer and earth

(g) Boosters are basically

(i) inductors

(ii) capacitors

(iii) transformers

(iv) synchronous motors

2. (a) Discuss the effect of increase of voltage on the weight of conductor, efficiency of line and line drop. 7

(b) Enumerate various types of supports used in a transmission line and explain in brief any one of them with the help of a neat sketch. 7

3. (a) Give the Indian Electricity Rules pertaining to clearance in case of transmission system. 7

(b) What is corona ? How can corona loss be reduced ? 3+4

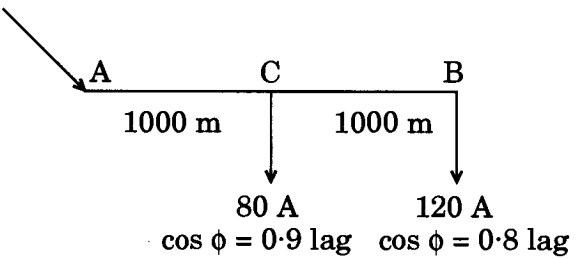
4. (a) Draw and explain the layout of an LT distribution system. 7

(b) What are the different methods of cable laying ? Explain any one in brief. 7

5. (a) A single-phase 2-wire distributor, 2000 metres long, supplies a load of 120 A at 0·8 p.f. lagging at its far end and a load of 80 A at 0·9 p.f. lagging at its mid end. Both power factors referred to voltages at far end. The resistance and reactance are 0·05 Ω and 0·1 Ω respectively. If the voltage at the far end is maintained at 230 volts, calculate

(i) load current at B, and

(ii) impedance of sections AC and CB. 7



(b) Enumerate the various apparatus and protective devices used in a 220/132 kV outdoor power substation. 7

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

(a) Types of tariffs

(b) Maintenance schedule of distribution lines

(c) Estimation of 11 kV/440 V pole mounted substation

(d) Disadvantage of low power factor

(e) Methods of earthing