Roll No. .....

24141

B. Tech 4th Semester (E. E.)

Examination – May, 2013

TRANSMISSION AND DISTRIBUTION

Paper : EE-212-F

Time : Three hours] *[Maximum Marks : 100*

Before answering the question, candidates should, ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 is ***compulsory.*** Attempt ***one*** question from each Section. All questions carry equal marks.

1. (a) Enlist various equipment used in substations.

(b) What is proximity effect ?

(c) Discuss briefly sag.

(d) What is skin effect ?

(e) Enlist the various types of delinks in HVDC. Explain *one* of them briefly. $5 \times 4 = 20$

SECTION – A

2. (a) Draw a single line diagram of a 220 kv/66 kv substation showing all the equipments. The station has one 220 kv incoming line and two 66 kv outgoing lines and two power transformers. 10

(b) Classify the substation according to the service and constructional features broadly. 10

3. Explain different types of distribution system with the help of neat sketches. 20

SECTION – B

4. A 3-phase, 50 Hz 1000 km long transmission line has the following line constants per phase per km uniformly distributed

$r = 0.22\,\Omega; x = 0.45\,\Omega, g = 4 \times 10^{-9} S$ and $b = 2.53 \times 10^{-6} S$

Determine the auxillary constants, (i) by using convergent series of complex angles (ii) by using convergent series of real angles. 20

5. Write short notes on : 10 + 10 = 20

(a) Classification of transmission lines.

(b) Regulation and efficiency of transmission line.

SECTION – C

6. (a) What electrical and mechanical characteristics are required for a good insulator for used in HV transmission line. 10

(b) Name the various materials that are used for overhead line insulators. Why glass insulators cannot be used above 50 kv ? 10

7. (a) Obtain an expression for the sag of a transmission line supported by towers of different heights at the ends. 10

(b) Explain how the effect of wind and ice can be included in sag calculation of transmission lines ? 10

SECTION – D

8. What is corona and what are the factors affecting corona loss ? Discuss them briefly. What are the methods of reducing corona loss ? Discuss the advantage and disadvantage of corona. 20

9. A certain three phase equilateral transmission line has a total corona loss of 53 kw at 106 kv and a loss of 98 kw at 110.9 kv. What is the disruptive critical voltage between lines ? What is the corona loss at 1.3 kv ? 20