ONE TIME EXIT SCHEME

Fifth Semester B.E. Degree Examination, April 2018
Transmission and Distribution

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Draw and explain the line diagram of a typical transmission and distribution scheme. Indicate clearly the voltage levels used at different stages. **(05 Marks)**
   b. State the advantages of high voltage transmission. **(05 Marks)**
   c. Explain the following components of distribution:
      i) Substation   ii) Distribution substation   iii) Feeder
      iv) Distribution   v) Service mains. **(10 Marks)**

2 a. Derive an expression for a sag in a power conductor string between two supports at equal heights taking the effect of wind and ice coating. **(10 Marks)**
   b. The towers of height 30 m and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 560 m. the ultimate strength of the conductor is 6400 kg. Find the minimum clearance of the conductor and water and clearance midway between the supports. Weight of the conductor is 1.5 kg/m. Bases of towers can be considered to be at water level. Factor of safety may be taken as 4. **(10 Marks)**

3 a. List the different types of insulators used in transmission and distribution system and hence explain different types of testing of insulators. **(10 Marks)**
   b. What are the possible methods to improve the string efficiency of an insulator string and explain? **(10 Marks)**

4 a. List out the advantages and disadvantages of corona. **(05 Marks)**
   b. What is critical disruptive voltage? State its significance. **(05 Marks)**
   c. What is meant by grading of a cable? Explain the various methods of grading of cables. **(10 Marks)**

PART – B

5 a. Derive the expression for capacitance of a 3 phase line with unsymmetrical horizontal spacing. **(10 Marks)**
   b. A 3 phase, 50 Hz, 66 KV overhead line conductors are placed in a horizontal plane as shown in the Fig.Q5(b).
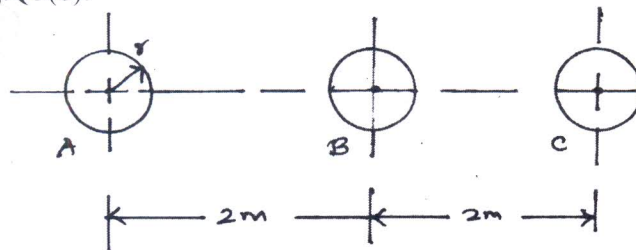

Fig.Q5(b)

   The conductor diameter is 1.25 cm. If the line length is 100 km, calculate: (i) Capacitance/phase, (ii) Charging current/phase, assuming complete transposition of the line. **(10 Marks)**