Q. P. Code: 37762

Time: 3 Hours   **Marks: 80**

N.B: 1. Q1 IS COMPULSORY.IN ALL SOLVE FOUR QUESTIONS.
     2. IF REQURIED ASSUME SUITABLE DATA.
     3. ALL QUESTIONS CARRY EQUAL MARKS.

Q1   20
    A) DRAW SINGLE LINE DIAGRAM OF TYPICAL A C SUPPLY SYSTEM AND EXPLAIN.
    B) EXPLAIN STRING EFFICIENCY.
    C) DRAW AND EXPLAIN BUNDLED COUNDUCTOR.
    D) EXPLAIN PER UNIT SYSTEM AND ITS ADVANTAGE.
    E) EXPLAIN FERRANTI EFFECT.
    F) DEFINE EARTHING AND ITS TYPES.

Q2   20
A) DERIVE AN EXPRESSION OF SAG FOR SUPPORT OF EQUAL GROUND LEVEL AND
   SUPPORT AT UNEQUAL GROUND LEVEL.
B) COMPARE AC AND DC SUPPLY SYSTEM.

Q3   20
 A) A STRING INSULATOR HAS FIVE UNITS EACH RATED FOR 11KV. FIND THE MAXIMUM LINE
   VOLTAGE ON WHICH IT CAN BE OPERAYED SAFELY. THE MUTUAL CAPACITANCE
   OF UNIT IS 10 TIMES THE CAPACITANCE BETWEEN PIN TO EARTH.
B) PROVE THAT PU IMPEDANCE OF TRANSFORMER CAN BE MADE SAME REFERRED TO
   BOTH WINDING'S BY SELECTING PROPER VOLTAGE BASES ON EITHER SIDES.

Q4   20
A) "IN A LIGHTLY LONG TRANSMISSION LINE, RECEIVING END VOLTAGE IS GREATER
   THAN SENDING END VOLTAGE". JUSTIFY.
 B) EXPLAIN MEASUREMENT OF EARTH RESISTANCE AND SOIL RESISTANCE.

Q5   20
A) A 3 PHASE. 50 HZ , 100KM , LONG OVERHEAD LINE HAS FOLLOWING
   CONSTANTS.RESISTANCE/PH/KM=0.153OHM INDUCTANCE/PH/KM= 1.21mH,
   CAPACITANCE/PH/KM=0.00958 uF. THE LINE SUPPLIES A LOAD OF 25MVA AT 0.8 P.F.(LAG)
   AT A LINE VOLTAGE OF 110KV AT RECEIVING END. USING NOMINAL π
   REPRESENTATION, CALCULATE SENDING END VOLTAGE, SENDING END CURRENT AND
   SENDING END POWER FACTOR.
B) EXPLAIN SKIN EFFECT AND PROXIMITY EFFECT.

Q6   20
A) EXPLAIN GRADING OF CABLES AND ITS TYPES.
B) EXPLAIN SURGE IMPEDANCE AND SURGE IMPEDANCE LOADING.