

**SUBJECT CODE NO:- K-67**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E. (EEP/EE/EEE) Examination Oct/Nov 2016**  
**Electrical Power Transmission & Dist.**  
**(Revised)**

**[Time:Three Hours]**

**[Max. Marks:80]**

N.B Please check whether you have got the right question paper.

- i) Q.No.1 and Q.No.6 are compulsory.  
ii) Answer any two question from Q.No2 to 5 from section A.  
iii) Answer any two question from Q.No 7 to 10 from section B  
Section- A

- Q.1 Attempt any (five)
- a) What is tariff and types of tariff 02
  - b) Describe the desirable characteristics of a tariff. 02
  - c) List out different types of Distribution power systems. 02
  - d) Classification based on length & voltage of power transmission line. 02
  - e) What is concept of T &  $\pi$  type method calculation? 02
  - f) What is interconnected system of distribution. 02
  - g) What is corona loss 02
  - h) Define string efficiency. 02
- Q.2
- a) State major equipments in sub-station with its functions. 05
  - b) What is transposition of conductor & why it is needed. 05
  - c) A power station has a maximum demand of 15000 kw. The annual load is 50% and plant capacity factor is 40 % . Determine the reserve capacity of the power station. 05
- Q.3
- a) Explain clearly skin effect and proximity effect when referred to over head lines. 05
  - b) What is corona? Explain factor affecting corona. 05
  - c) A string of four insulator has as a self capacitance equal to 5 times pin to earth  $\times C = 1 \Omega$  .Find (i) the voltage distribution a/cross various units as a percentage of total voltage across the string (ii) string efficiency. 05
- Q.4
- a) Find an expression for flux linkage due to single current carrying conduct. 05
  - b) Derive expression for nominal  $\pi$  method. 05
  - c) A transmission tower on a level ground, gives min. clearance of 8 meter for its lowest conductor with sag of 10 meter for a stream of 300 meter. If the same tower is to be used over a scope of 1 in 15 , find the minimum ground clearance obtained for the same span , same conductor and same weather conditions. 05

- Q.5 Writes short notes. 15
- Type of distribution system.
  - Load forecasting
  - Penalty tariff and incentives.

#### Section – B

- Q.6 Attempt any five of following
- What are types of underground cable. 02
  - What is armoring of cable. 02
  - What are A B C D constants. 02
  - What is ACSR conductor and state its significance. 02
  - State different types of underground cable. 02
  - What is meant by Ferranti Effect. 02
  - What is dielectric stress. 02

- Q.7
- Draw neat sketch of underground cable and explain its constructional features. 05
  - Discuss various types of O/H line supports. 05
  - Derive expression of capacitance of 3 phase line with unsymmetrical spacing. 05

- Q.8
- Compare EHVAC and HVDC transmission line. 05
  - State the values of generalized circuit constant of ABCD in case of Type equation here. 05
    - T equivalent circuits.
    - T-T equivalent circuits of medium transmission
  - A 33 kv ; 50 Hz ; 3dia. underground cable 4km long uses three single core cables. Each of the conductor has a diameter of 2.5 cm and radial thickness of insulation is 0.5 cm Determine
    - Capacitance of cable/ phase
    - Charging current / phase
    - Total charging KVAR .
 The relative permittivity of insulation is three.

- Q.9
- Explain grading of cable and one method of locating faults. 05
  - What are desired characteristics of ideal insulators used in transmission lines? 05
  - A 3 phase 50 hz, 150kms line has a resistance ,inductance reactance and capacitive shunt admittance of  $0.1 \Omega$  ,  $0.5 \Omega$  and  $3 \times 10^{-6}$  per km per phase If the line delivers 50 MW at 110 Kv and 0.8 power factor . Logging ,determine the sending end voltage and current .Assume a nominal  $\pi$  circuit for the line. 05

- Q.10 Write short notes. 15
- XLPE Underground cable
  - Effect of ice and wind loading on transmission line
  - Concept of GMR and GMD.