

B.TECH SEM – V (2007 COURSE) (ELECTRICAL ENGG.) :

SUMMER - 2018

SUBJECT: TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

Day : **Thursday**
Date : **24/05/2018**

S-2018-2667

Time : **10.00 AM TO 01.00 PM**
Max. Marks: 80

N. B. :

- 1) **Q.No.1 and Q. No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each sections.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Answer the both sections should be written in the **SEPARATE** answer books.
 - 4) Assume suitable data if necessary.
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SECTION - I

- Q1.** a) What are the materials used for conductor of three phase transmission line? (05)
Describe their properties.
- b) Explain the skin effect? What parameters may affect the skin effect? (05)
- c) What are factors affecting corona? (04)
- Q.2** a) Define string efficiency. Also describe various methods of equalizing (07)
potential across the insulating string?
- b) What are the various reasons by which transmission line insulators may get (06)
fail?
- Q.3** a) With neat diagram explain the pi representation of medium transmission line. (07)
Also draw the phasor diagram.
- b) What is the maximum length in km for a single phase transmission line (06)
having copper conductor of 0.8 sq. cm, cross sectional area over 200 kW at
unity p.f. and at 3300 V are to be delivered? The efficiency of transmission is
90 %. Take specific resistance as $1.725 \mu\Omega \text{ cm}$.
- Q.4** a) Explain how corona affects the interference communication line. Also state (07)
the methods to reduce corona effect.
- b) The towers of height 35 m and 95 m respectively support the transmission line (06)
conductor at river crossing. The span length is 500 m. if the tension in the
conductor is 1650 kg, find the minimum clearance between conductor and
water. Weight of conduct is 1.6 kg/m. Assume the two supports are at same
level.

SECTION - II

- Q5.** a) Explain how underground cables are classified? (05)
- b) How distribution systems are classified? (05)
- c) What parameters are considered while selecting the site for substation? (04)

P.T.O.

- Q.6 a)** Draw the cut section of oil filled cable and explain function of each part. (07)
- b)** A three phase underground cable of 5 km long has 3 conductors. Each of the conductor has a diameter of 3 cm and radial thickness of insulation is 0.6 cm. determine the total charging kVAR if supply voltage is 33 kV at 50 Hz. Assume relative permittivity of insulation to be 04. (06)
- Q.7 a)** Describe the procedure of calculation of voltage drop of ac feeder if fed from one end and having distribution of load at various points. Explain with example. (07)
- b)** What are the factors to be considered while designing the feeder? (06)
- Q.8 a)** Describe various electrical equipments used in case substations. (07)
- b)** Draw the single line diagram of 132 kV / 22 kV substations and explain the same. (06)

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