

SUBJECT CODE NO:- P-349
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E. (EEP/EE/EEE) Examination MAY/JUNE-2016
Electrical Power Transmission & Distribution
(Revised)

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B

- 1) Question No 1 & 6 are compulsory.
- 2) Answer any two questions from no 2 to Question no 5 from section A.
- 3) Attempt any two questions from Q. no 7 to Question 10 from section B.

Section A

- | | | |
|-----|---|----------------|
| Q.1 | Attempt <u>any five</u> | 10 |
| | <ol style="list-style-type: none"> a) Define transmission efficiency. b) What are the causes of voltage drop & line loss in a transmission line? c) What are the units of generalized constants of a transmission line? d) What is ring main distribution system? e) What is proximity effect? f) State any eight components of transmission line. g) What is block rate tariff and flat rate tariff? | |
| Q.2 | <ol style="list-style-type: none"> a) State three parameters of transmission line. What is the effect of line parameters on performance of Transmission line? b) Define and explain Unsymmetrical spacing. c) A Generating station has maximum demand. Of 25 MW; a load factor of 60% a plant capacity factor of 50% and a plant use factor of 72% find <ol style="list-style-type: none"> 1) A reserve capacity of plant 2) The daily energy produced and 3) Maximum energy that could be produced daily if the plants while running as per schedule were fully loaded. | 05
05
05 |
| Q.3 | <ol style="list-style-type: none"> a) What is skin effect- why it is absent in DC system. Explain it in detailed. b) Explain requirement of Ideal distribution system. c) In 33KV overhead line there are three units in a string of insulators. If the capacitance between each insulator pin & earth is 11% of self-capacitance of each insulator find <ol style="list-style-type: none"> 1) The distribution of voltage over three insulators and 2) String efficiency. | 05
05
05 |
| Q.4 | <ol style="list-style-type: none"> a) Effects of high voltage on volume of copper and on efficiency PL explain. b) Explain different types of overhead line insulators. c) Derive the expression for nominal T method. | 05
05
05 |
| Q.5 | <ol style="list-style-type: none"> a) Write a short note on <ol style="list-style-type: none"> 1) Storage batteries in sub-station 2) Penalty tariff & incentives 3) Load forecasting | 15 |

Section B

- Q.6 Any five only 10
- What is cable and state its necessity?
 - State the effect of low power factor on
 - Efficiency
 - Regulation of Tran's line.
 - What are types of underground cables?
 - What is serving?
 - What is dielectric stress?
 - State two methods of locating cable fault.
 - Effect of capacitance on transmission line.
- Q.7
- Draw neat sketch of underground cable & explain its constructional features. 05
 - Derive the expression for capacitance of I-D with earth & without earth effect. 05
 - A 3-phase 50Hz 132 kv overhead line has conductors placed in a horizontal plane 4 meter apart conductor diameter is 2cm. if the length of line is 100kms. Calculate the charging current per phase assuming complete transposition. 05
- Q.8
- Compare EHV AC and HVDC transmission line. 05
 - Derive the expression for capacitance of 3 phase line with unsymmetrical spacing. 05
 - A single core cable for use on 11KV 50Hz system has conductor area of 0.645 cm^2 and internal diameter of sheath is 2.18 cm. the permittivity of dielectric used in the cable is 3.5 find 05
 - Maximum electrostatic stress in the cable
 - Minimum electrostatic stress in the cable
 - Capacitance of cable per km length
 - Charging current
- Q.9
- Methods of laying underground cables in special locations explain with neat sketch. 05
 - State the values of generalized circuit constants of ABCD in case of 05
 - T- equivalent circuit
 - T-T equivalent circuit of medium transmission line
 - An overhead line at a river crossing is supported from two towers at a heights of 40m and 90 meters above water level; the horizontal distance between the towers being 400 meter. If the maximum allowable tension is 2000kg. Find the clearance between the conductor and water at a point mid-way between the towers. Weight of conductor is 1 kg/meter. 05
- Q.10 Write a short note on 15
- Grading of cables
 - Methods to improve string efficiency
 - GMR & GMD