Reg. No. :

Question Paper Code: 44033

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electrical and Electronics Engineering

14UEE403 - TRANSMISSION AND DISTRIBUTION

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. If Power P available from a hydro scheme is given by the formula P = 9.81QH, where Q is the flow rate through the turbine in l/s and H is the head in metres, then P will be in units of

   (a) HP   (b) W   (c) KJ/s   (d) kWh

2. A bus bar is rated by

   (a) Current and voltage only   (b) Current only
   (c) Frequency only   (d) Current and voltage and frequency

3. The skin effect of a conductor will reduce as the

   (a) Diameter increases
   (b) Frequency increases
   (c) Permeability of conductor material increases
   (d) Resistivity of conductor material increases

4. Overhead lines generally use

   (a) Copper conductors   (b) All aluminum conductors
   (c) ACSR conductors   (d) None of these

5. Ferranti effect happens in transmission line when the line is

   (a) Short and loaded   (b) Long and loaded

   (c) Long and unloaded   (d) None of these

6. Ferranti effect on long overhead lines is experienced when it is

   (a) Lightly loaded   (b) On full load at unity *p.f*

   (c) On full load at 0.8 *p.f lag*   (d) On full load with 0.6 *p.f lag*

7. Which of the following protects a cable against mechanical injury?

   (a) Bedding   (b) Sheath

   (c) Armoring   (d) Serving

8. Transmission line insulators are made of

   (a) Glass   (b) Porcelain   (c) iron   (d) PVC

9. Electro mechanical voltage regulators are generally used in

   (a) Reactors   (b) Generators

   (c) Transformer   (d) All the above

10. The knowledge of maximum sag is essential in determining the

    (a) Ground clearance of the conductor   (b) Maximum span of the conductor

    (c) Maximum stress on the conductor   (d) Load capacity of line

PART - B (5 x 2 = 10 Marks)

11. How does AC distribution calculations differ from DC distribution?

12. Define skin effect.

13. Define voltage regulation of a transmission line?

14. What are the types of insulators?

15. Point out the factors that should be taken care of while designing and erecting a substation.

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PART - C (5 x 16 = 80 Marks)

16. (a) Draw a schematic layout of a typical AC power supply scheme and explain the operation of various components involved in the system. (16)

Or

(b) Illustrate the structure of power system indicating the different voltage level.(16)

17. (a) Derive the expression for capacitances of single phase transmission system and discuss the effect of earth on capacitance with suitable equation. (16)

Or

(b) Obtain the expression for capacitance of a 3 phase unsymmetrical spaced overhead line. (16)

18. (a) (i) Show how regulation and efficiency are determined for medium lines using nominal Pi method. (10)

(ii) Determine the ABCD constants for a short transmission line. (6)

Or

(b) Derive the expression for sending end voltage in nominal T method. (16)

19. (a) (i) Insulator string efficiency can be improved by using long cross arms. Justiy the statement. (8)

(ii) Derive an expression for dielectric stress in a single core cable. (8)

Or

(b) Categorize grading of cables with neat diagram. (16)

20. (a) (i) Deduce an approximate expression for sag in overhead lines when supports are at equal levels. (10)

(ii) Classify the various types of substations according to service requirements. (6)

Or

(b) Explain various methods of grounding. (16)

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