Reg. No. : | | | | | | | | | | | |

T 3255

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Fourth Semester

(Regulation 2004)

Electrical and Electronics Engineering

EE 1252 — TRANSMISSION AND DISTRIBUTION

(Common to B.E. (Part–Time) Third Semester Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. State the advantages of EHV AC transmission system.

2. What is meant by STATCOM?

3. Mention the advantages of bundled conductor.

4. What is skin effect?

5. Classify transmission line based on its length.

6. Draw the nominal π representation of a transmission line.

7. Define string efficiency.

8. Name any four insulating material used for making underground cable.

9. Based on what criteria the substation bus schemes are chosen.

10. State the function of circuit breaker.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss various types of HVDC links. (8)

(ii) List out the main components of a HVDC system. (8)

Or

(b) Draw and explain the structure of modern power systems with typical voltage levels. What is the highest VDH level available in India? (13 + 3)

12. (a) From the fundamentals derive an expression for inductance of a single phase transmission system. (16)

Or

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

13. (a) Determine the efficiency and regulation of a 3 – phase, 100 Km, 50 Hz transmission line delivering 20 MW at a power factor of 0.8 lagging and 66 kV to a balanced load. The conductors are of copper, each having resistance 0.1 Ω/km, 1.5 cm outside dia, spaced equilaterally 2 metres between centres. Use nominal T method. (16)

Or

(b) A three phase 5 km long transmission line, having resistance of 0.5 Ω/km and inductance of 1.76 mH/km is delivering power at 0.8 pf lagging. The receiving end voltage is 32 kV. If the supply end voltage is 33 kV, 50 Hz, find line current, regulation and efficiency of the transmission line. (16)

14. (a) Discuss any two methods to increase the value of string efficiency, with suitable sketches. (16)

Or

(b) Explain any two methods of grading of cables with necessary diagrams. (16)

15. (a) With a neat sketch, explain double bus with double breaker and double bus with single breaker. State their advantages and disadvantages.

Or

(b) Explain the following :

(i) Neutral grounding.

(ii) Resistance grounding.