

TED (15) – 4034

(REVISION – 2015)

Reg. No.

Signature

FOURTH SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL
AND ELECTRONICS ENGINEERING — APRIL, 2017

ELECTRICAL POWER GENERATION, TRANSMISSION
AND DISTRIBUTION

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. List any two types of conventional methods for electrical power generation.
2. State the role of super heater in thermal power station.
3. Define the term demand factor of a power station.
4. Write the equation for inductance of 3 phase line with symmetrical spacing.
5. Name any two types of materials used for construction of insulators on over head line. (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* questions from the following. Each question carries 6 marks.

1. Draw a labelled schematic diagram of a diesel power plant.
2. Explain the factors governing the site selection of a hydro electric power plant.
3. Explain base load and peak load with a load curve.
4. Explain any four objectives of Tariff.
5. Explain ferranti effect in transmission line system with suitable sketches.
6. Compare OH and UG system of electrical power Distribution.
7. Illustrate the string efficiency. Explain any two methods to improve string efficiency. (5 × 6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks)

UNIT — I

III Explain the working of a steam power plant with necessary schematic layout and explain the functions of each components of this power plant.

15

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OR

[P.T.O.]

- | | Marks |
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| IV (a) Draw a labeled schematic diagram of an Atomic power plant and explain the function of Nuclear Reactor. | 7 |
| (b) Draw a labeled schematic diagram of a hydro electric power plant and describe it's working. | 8 |

UNIT — II

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| V (a) Calculate annual bill of a consumer whose maximum demand is 100 KW, power factor is 0.8 lagging and load factor is 60%. The tariff used is ₹ 75 per KVA of maximum demand plus 15 paisa per kwh consumed. | 7 |
| (b) Draw a daily load curve of a power station and explain importance of it. | 8 |

OR

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| VI (a) A generating station has a connected load of 43 MW and a maximum demand of 20 MW, the units generated being 61.5×10^6 per annum. Calculate (i) the demand factor and (ii) load factor. | 7 |
| (b) Name different types of tariff used and explain any four types of Tariff. | 8 |

UNIT — III

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| VII (a) A 220 KV transmission line has the following data :
w t. of conductor = 680 kg/km, Length of span = 260 m, Ultimate strength = 3100 kg, Safety factor = 2. Calculate the height above ground at which the conductor should be supported. Ground clearance required is 10 meters. | 7 |
| (b) Illustrate the phenomenon of corona and skin effect in transmission system with suitable sketches. | 8 |

OR

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| VIII (a) An overhead 3 phase transmission line delivers 5000 KW at 22 KV at 0.8 power factor lagging. The resistance and reactance of each conductor is 4 ohm and 6 ohm respectively. Determine
(i) Sending end voltage (ii) Percentage regulation. | 7 |
| (b) Explain why transposition of line conductors is essential. | 8 |

UNIT — IV

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| IX (a) Explain construction of a UG cable with neat sketch. | 7 |
| (b) Explain methods of power factor improvement in Distribution system. | 8 |

OR

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| X (a) Explain grading of cables with necessary sketches. | 7 |
| (b) Explain methods of Distribution system according to scheme of connection. | 8 |