

B.E. / B.Tech. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester-V
TE102A - Power Plant Engineering

P. Pages : 2

Time : Three Hours



GUG/W/24/13863

Max. Marks : 80

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- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
 6. Non programmable calculator is permitted.

1. a) A power plant has an initial invested cost of Rs. 2×10^8 . Assuming a salvage value of 15% interest rate and useful life of 25 years, calculate the annual depreciation reserve by- **8**
- i) Straight Line Method
 - ii) Sinking Fund Method
 - iii) Fixed Percentage Method
 - iv) Accumulated depreciation at the end of 10 years.

- b) What is Load Curve? What information is obtained from Load curve? **8**

OR

2. a) Explain: **8**
- | | |
|--------------------|---------------------|
| 1) Average Demand | 2) Load Factor |
| 3) Capacity Factor | 4) Diversity Factor |

- b) Explain the term Depreciation and methods to obtain depreciation charges. **8**

3. a) Draw the basic layout of steam power plant and explain ash and coal handling circuit. **8**
- b) State and explain advantages and disadvantages of using pulverized coal in modern thermal power plant. **8**

OR

4. a) Explain Feed Water and Steam Flow Circuit and Cooling Water Circuit. **8**
- b) State the location and explain the function of following components of thermal power plant. **8**
- | | |
|------------------|-------------------|
| 1) Superheater | 2) Condenser |
| 3) Steam turbine | 4) Cooling Towers |

5. a) State and explain different equipments of diesel power plant. 8
b) State and explain applications of diesel power plant. 8

OR

6. a) Draw and explain different equipments of closed circuit of a diesel engine cooling. 8
b) State the factors considering while selection of site for diesel power plant and compare diesel power plant with thermal power plant. 8
7. a) State and explain: 8
1) Nuclear Energy 2) Radioactivity
3) Nuclear Chain Reaction 4) Multiplication factor
b) Explain nuclear power plant and Nuclear reactor in nuclear power plant. 8

OR

8. a) State the location and function of following elements in hydroelectric power plant 8
1) Fore bay 2) Spillway
3) Tail race 4) Surge tank
b) Give the generalized description with neat sketch of hydroelectric power plant. 8
9. a) Explain closed circuit air cooling of turbo alternator. 8
b) Classify the different cooling system of Generator. 8

OR

10. a) Explain transformer in power plants with it's various applications. 8
b) Mention and explain different types of instruments used in power plants. 8
