

22327

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following :** **10**
 - (a) State the function of superheater and cooling tower of thermal power plant.
 - (b) Name any two hydroplants in Maharashtra with their capacity.
 - (c) State the function of penstock related to hydro-power plant.
 - (d) State any two disadvantages of solar energy.
 - (e) State the working of photovoltaic cell in brief.
 - (f) State any two applications of wind energy.
 - (g) Define the following terms :
 - (i) Cold reserve
 - (ii) Spinning reserve

- 2. Attempt any THREE of the following :** **12**
 - (a) Give the classification of coal and state the properties of each type.
 - (b) Draw the layout of a hydro-electric power plant and also state the function of reservoir and surge tank.
 - (c) Draw a neat layout of geared wind power plant and label it.
 - (d) State any four factors which should be considered while deciding the number of generating units and its size.

- 3. Attempt any THREE of the following :** **12**
- Describe methods to dispose solid, liquid and gaseous nuclear waste in short.
 - Draw a neat labelled diagram of Pelton turbine and explain its working in brief.
 - Describe the working of Fresnel reflectors in detail.
 - List out the salient features of wound rotor inductor generator used in large wind power plants.
- 4. Attempt any THREE of the following :** **12**
- Describe four stroke cycle of a Diesel engine in detail.
 - State the features of the solid, liquid and gas biomasses as fuel for biomass power plant.
 - List out the features of permanent magnet synchronous generator.
 - Compare base load plants with peak load plants on any four points.
 - State the impact and reasons of Grid system fault.
- 5. Attempt any TWO of the following :** **12**
- Draw a neat labelled layout of thermal power plant and explain the function of coal and ash handling plant.
 - Classify hydro power plant according to head of water and explain each type in brief.
 - Describe the working of Bio-Chemical based power plant with its layout.
- 6. Attempt any TWO of the following :** **12**
- Describe the specific safe practices to be followed with respect to hydro power plants.
 - Discuss the energy extraction process of Agro-chemical based power plant with its layout.
 - A generating station has the following daily load cycle :
- | | | | | | | |
|-----------------------|-----|------|-------|-------|-------|-------|
| Time (hours) : | 0-6 | 6-10 | 10-12 | 12-16 | 16-20 | 20-24 |
| Load (MW) : | 40 | 50 | 60 | 50 | 70 | 40 |
- Draw the load curve and find :
- Maximum demand
 - Units generated per day
 - Average load and
 - Load factor
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