

22327

11920

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) 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) List any two Thermal Power Station in Maharashtra with their installed capacity.
- b) State any two applications of solar energy.
- c) List out major wind farms in India.
- d) Define State grid and National grid.
- e) Name the main parts of solar power plant.
- f) Classify hydro power plant on the basis of availability of water head.
- g) List any two large hydro power plants in Maharashtra with their capacity.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Describe any four safe practices for Hydro Power Plants.
 - b) Draw a neat layout of typical Thermal power station and label it.
 - c) State the salient features of constant speed electric generator and variable speed electric generator.
 - d) List any four causes of faults on grid system.
- 3. Attempt any THREE of the following:** **12**
- a) Draw a block diagram of gas turbine power plant and label each block.
 - b) Explain with sketch the layout and working of parabolic through concentrated Solar Power plant.
 - c) State any four factors for selection of hydro power plant.
 - d) Describe with sketch the layout and working of Geared wind power plant.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the purpose of shielding and reflector in a nuclear reactor.
 - b) Explain with layout diagram; the construction and working of solar photo voltaic (PV) power plant.
 - c) Describe the layout and working of the horizontal and vertical axis small wind turbines.
 - d) Define :
 - (i) Max Demand
 - (ii) Average Demand
 - (iii) Plant capacity factor
 - (iv) Plant use factor
 - e) Compare base load and peak load power plants.

5. Attempt any TWO of the following:**12**

- a) State the types of radioactive wastes generated in a nuclear power station. Explain the methods employed for their disposal.
- b) State the functions of the following parts of hydroelectric power station:
 - (i) Reservoir
 - (ii) Tailrace
 - (iii) Spillway
 - (iv) Surgetank
 - (v) Forebay
 - (vi) Turbine
- c) Explain with sketch; the layout of a thermo chemical based (municipal waste) power plant.

6. Attempt any TWO of the following:**12**

- a) Explain with sketches the construction and working of the Pelton turbine used for high head power plant.
 - b) Describe the features of solid, liquid and gas biomasses as fuel for biomass power plant.
 - c) The peak load on a power station is 30 MW. The loads having maximum demands of 25 MW, 10 MW, 5 MW and 7 MW are connected to the power station. Capacity of the power station is 40 MW and annual load factor is 50%. Find:
 - (i) Average load on power station
 - (ii) Energy supplied per year
 - (iii) Demand factor
 - (iv) Diversity factor
-