



17324

15162

3 Hours / 100 Marks

Seat No.

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- 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.

Marks

1. Solve **any ten** of the following :

20

- a) State the various renewable energy sources of electrical energy.
- b) List four thermal power station in Maharashtra with their location and capacity.
- c) State any four factors governing selection of site for thermal power station.
- d) State the terms (i) Hydrology (ii) Precipitation related to power plant.
- e) List the turbines used in hydro power plant on the basis of water head.
- f) State the 4 properties of fuel used in nuclear power plant.
- g) State the term 'Nuclear shielding' in NPP.
- h) State the function of 'Exhaust system' in diesel electric power plant.
- i) Define the terms used in system operation :
 - i) Firm power
 - ii) Spinning reserve.
- j) Name any two advantages of state level interconnection of power stations.
- k) Write formula for solar constant.
- l) State the limitations of wind energy (any four).

2. Solve **any four** of the following :

16

- a) State any four comparisons between solid, liquid and gaseous fuels used for electrical energy generation.
- b) State the importance of electrical power in day to day life in India.
- c) Draw a neat sketch of super-heater and state their functions.

P.T.O.



- d) State any four salient features of turbo alternator. Where it is used ?
- e) State the location and function of the following elements used in hydel plant (i) Fore Bay (ii) Spillway (iii) Pen stock and (iv) Tail Race.
- f) Draw a schematic diagram of hydro power plant and label it.

3. Solve any four of the following :

16

- a) Draw a schematic block diagram of coal fired P.S. label each block.
- b) Explain the working of natural draught and forced draught in thermal P.S.
- c) Explain pumped storage power plant with the help of neat diagram.
- d) State the classification of hydro power plants based on load, water head available.
- e) Draw a neat sketch of Pressurized Water Reactor (PWR).
- f) State the function of moderator in NPs.

4. Solve any four of the following :

16

- a) State the various causes for the less efficiency of thermal power plant.
- b) State the location and function of the following elements in thermal P.S. (i) Economizer and (ii) Ash precipitators.
- c) State the factors governing selection of site for hydro electric power plant.
- d) State the harmful disposals which will come out in NPS. How they have been disposed ?
- e) State the terms related to atomic physics used in NPS.
 - i) Nuclear chain reaction and
 - ii) Critical size.
- f) Draw a complete layout of diesel electric power plant showing all the important parts and label it.

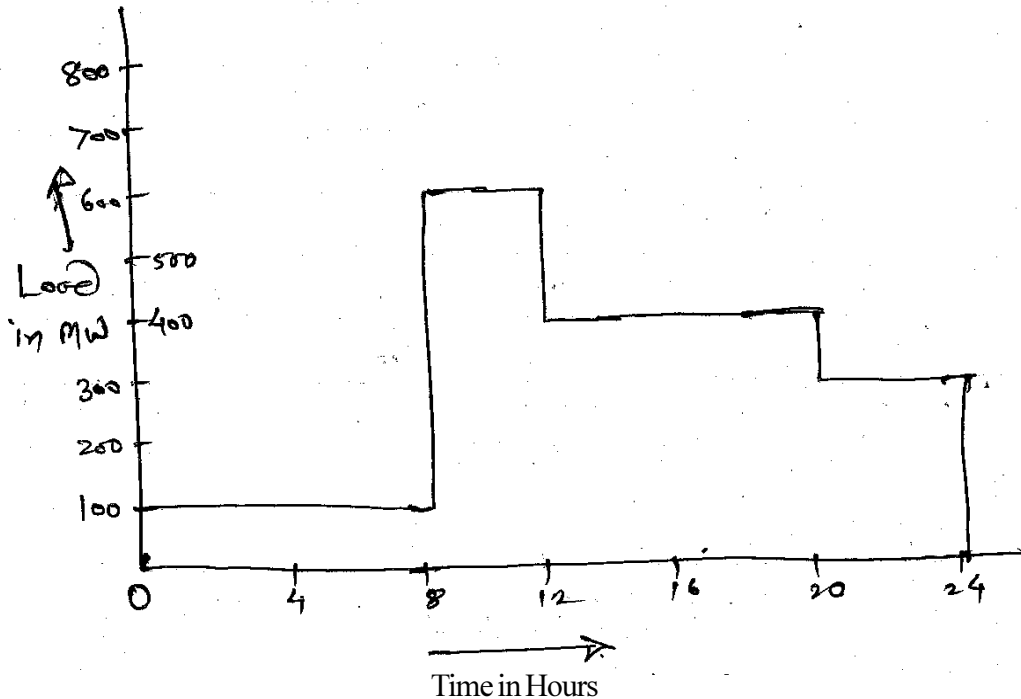
5. Solve any four of the following :

16

- a) Draw and explain the operation of Fast Breeder Reactor (FBR).
- b) How nuclear reactor can be controlled by using control rods and through flow of coolant ?
- c) State types of captive power plant. Explain any one for power generation.



- d) The daily load curve of a P.S. is shown in figure 5(d). Find :
- M.D. on the P.S.
 - Units generated per day
 - Load factor
 - Average load.



- With the help of schematic diagram explain the direct distribution of solar energy.
- With the help of functional block diagram explain photovoltaic power generating system.

6. Solve any four of the following :

16

- State the advantages and disadvantages of diesel power plant.
- The generating station has a 0.7 load factor with a 0.5 plant capacity factor and a 0.8 plant use factor. Maximum demand of the generating station is 30 MW. Calculate : (i) Energy produced per day (ii) Max. energy produced per day if the plant was running all the time.
- Explain the process of load sharing between interconnected power stations.
- State main components of wind power plant and state their functions.
- Draw concentrating type of collector and state their two demerits.
- State various types of wind turbines. Draw horizontal axis wind turbine.