



17324

11718

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.*
 - (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.*
 - (8) *Use of Steam tables, logarithmic, Mollier's chart is **permitted**.*

Marks

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

20

- a) Write the functions of reheater in steam plant.
- b) What are the steam prime movers ?
- c) What is penstock ? What is its function ?
- d) List out purpose and functions of power house.
- e) Write function of control rods in nuclear power plant.
- f) Write down any two advantages of nuclear power station.
- g) Name the different types of engines in diesel power plant.
- h) Define each of following terms :
 - i) Connected load
 - ii) Spinning reserve.
- i) What is the choice of size and number of generator units in interconnected power system ?
- j) Define the term solar constant.

P.T.O.

**Marks**

k) State the meaning of following terms :

- i) Power in wind
- ii) Maximum power.

l) State the types of wind turbines.

2. Attempt any four of the following :

16

- a) What is renewable source of energy ? State two examples for the same.
- b) Give examples of different types of fuels. Also state any two advantages of liquid fuels over solid fuels.
- c) State any four factors governing selection of site for thermal power station.
- d) With the help of schematic diagram, state various stages in coal handling unit.
- e) List any four hydro-electric power plants in Maharashtra with their location and capacity.
- f) State the significance of following terms :
 - i) Hydrology
 - ii) Surface run-off
 - iii) Evaporation
 - iv) Precipitation

3. Attempt any four of the following :

16

- a) Distinguish between fire tube and water tube boilers in steam power plant.
- b) Define natural, mechanical, forced and induced draught systems.
- c) State the function of following elements :
 - i) Storage reservoir
 - ii) Intake
 - iii) Trash rack
 - iv) Tail race.
- d) Classify hydro-electric power plants according to water flow regulation and explain in brief.
- e) List any four nuclear power plants in India with their location and capacity.
- f) State any four factors for selecting location of nuclear power plant.



4. Attempt **any four** of the following :

- a) State the location and function of
 - i) Economizer
 - ii) Feed water heater.
- b) Explain ash disposal and dust collection in a thermal power plant.
- c) List out any four salient features of hydrogenerator.
- d) What is mass energy equivalence ? Give one example. Define mass defect and binding energy.
- e) State the term nuclear fuel. Also state its properties.
- f) State the functions of following elements :
 - i) Diesel engine system
 - ii) Air intake system
 - iii) Engine exhaust system
 - iv) Engine starting system.

5. Attempt **any four** of the following :

16

- a) Explain the operation of advanced gas cooled reactor.
- b) Show the schematic arrangement and explain the working of nuclear power plant.
- c) List out the four applications of diesel electric power plant.
- d) A generating power station has the following daily load cycle :

Time (Hours) : 0 – 6 6 – 10 10 – 12 12 – 16 16 – 20 20 – 24

Load (M. W.) : 12 24 18 12 28 20

Draw the load curve and find

- i) Maximum demand
 - ii) Units generated per day
 - iii) Average load
 - iv) Load factor.
- e) Explain the importance of renewable energy sources in the energy deficient India.
 - f) Draw schematic representation of distribution of solar energy as direct, diffuse, total radiation.

**Marks****16**

6. Attempt **any four** of the following :

- a) State why efficiency of thermal power station is about 29%. How it can be improved ?
 - b) List out the four advantages and four disadvantages of captive power generation.
 - c) Define each of the following terms :
 - i) Average demand
 - ii) Demand factor
 - iii) Plant capacity factor
 - iv) Plant use factor.
 - d) Compare flat plate collectors with concentrating type solar collectors.
 - e) State the principle of solar cell. What is necessity of series and parallel connection of solar cells.
 - f) State any four factors for selection of site of wind power plant.
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