# 17324

**16172**

**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) List any two types of fuels used in electrical power generation plants.
   b) List any two thermal power plant with capacity and location in Maharashtra.
   c) State the different types of condensers used in thermal power station.
   d) List any two hydro power stations with capacity in Maharashtra.
   e) Write any two disadvantages of hydro power plant.
   f) State any two nuclear power plant with capacity in India.
   g) Write any two factors for selection site for nuclear power plant.
   h) State the different types of engines in diesel power plant.
   i) Write the meaning of captive power generation.
   j) Define :
      I) Connected load        II) Firm power
   k) Write formulae for solar constant.
   l) State any two limitations of wind energy.

2. Attempt **any four** of the following :        **16**
   a) Write any four advantages and four disadvantages of thermal power plant.
   b) State any four factors for selection of hydro power plant site.
   c) State any four advantages and four disadvantages of diesel electric power plant.
   d) State any four advantages of interconnected system.
   e) Compare conventional energy sources with renewable energy sources on any four points.
   f) Draw the labelled diagram of flue gas flow related to thermal power plant.

**P.T.O.**

**Marks**

3. Attempt **any four** of the following :     **16**
   a) State any four factors governing for selection of site for thermal power plant.
   b) Write any four advantages of hydropower plant.
   c) Define :
      i) Diffuse radiation      ii) Beam radiation
      iii) Insolation      iv) Solar constant
   d) Explain the nuclear chain reaction in a nuclear power plant.
   e) A plant having load factor of 0.6 has peak load of 110 MW. Calculate energy generated by this plant in one month of 30 days.
   f) Draw a labelled schematic block diagram of thermal power plant showing all the components of the plant.

4. Attempt **any four** of the following :     **16**
   a) State the function of superheater and economizer.
   b) Explain working of pumped storage plant.
   c) Draw the block diagram of basic wind energy conversion system and write function of each block.
   d) Explain with block diagram photovoltaic power generation.
   e) Explain starting system in diesel electric power plant.
   f) The peak load on a power plant is 40 MW. The loads having maximum demand of 30 MW, 5 MW and 8 MW are connected to the power station.
      The annual load factor is 50% find :
      i) Average load on power station      ii) Demand factor
      iii) Diversity factor      iv) Load factor

5. Attempt **any four** of the following :     **16**
   a) State any four advantages of wind energy.
   b) Explain with schematic diagram direct distribution of solar energy.
   c) Explain the working of BWR nuclear power plant.
   d) Explain the procedure for disposal of nuclear waste with suitable diagram.
   e) Explain with diagram load duration curve.
   f) State the classification of hydro power plant
      I) According to load      II) Pumped storage power plant

6. Attempt **any four** of the following :     **16**
   a) State any four salient features of turbo-alternator.
   b) State any two advantages and two disadvantages of nuclear power plant.
   c) Explain fuel system and air intake system in diesel electric power plant.
   d) Explain working of fast breeder reactor.
   e) Define the following terms and state their significance :
      I) Hydrology      II) Surface runoff
      III) Evaporation      IV) Precipitation
   f) State the function of following with respect to hydro power plant :
      I) Storage reservoir      II) Surge tank
      III) Spillways      IV) Trash rack

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