17324

21718

3 Hours / 100 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) Use of Non-programmable Electronic Pocket Calculator is ***permissible****.*

Marks

1. Attempt **any ten** of the following : **20**

a) State the importance of electrical power. **2**

b) List the renewable energy sources. **2**

c) What is captive power plant ? **2**

d) List any two hydro power plants in Maharashtra with their generating capacity. **2**

e) What is pulverized fuel ? State any two advantages. **2**

f) What are the various sources of energy ? **2**

g) State any two disadvantages of thermal power station. **2**

h) State the function of condenser. **2**

i) Define firm power and connected load. **2**

j) State any four applications of diesel power plants. **2**

k) State four nuclear power plants in India. **2**

l) List out any four electrical equipments used in hydro electric power plant. **2**

m) List the main parts of diesel electric power plant. **2**

n) Draw the diagram of solar energy. **2**

2. Attempt **any four** of the following : **16**

a) Define (a) Thermal efficiency (b) Calorific value. **4**

b) State any eight advantages of nuclear power station. **4**

c) Explain the basic components of a wind energy conversion system. **4**

Marks

d) Why it is necessary to interconnect generating systems ? State any four advantages. **4**

e) Explain the construction and principle of operation of photo voltaic cell. **4**

f) Draw and explain the function of cooling tower in a thermal power station. **4**

3. Attempt **any four** of the following : **16**

a) Draw schematic diagram of thermal power station showing all its parts. **4**

b) Write function, location and advantages of the following equipments used in hydro electric power plant.

i) Penstock

ii) Spillways

iii) Forebay

iv) Tailrace. **4**

c) State the types of solar cells. **4**

d) Compare thermal, hydro, nuclear and diesel power plants on the basis of (i) initial and (ii) running cost (iii) pollution effects (iv) applications. **4**

e) State any four advantages and disadvantages of wind power. **4**

f) Draw schematic arrangement of nuclear power station and explain main stages. **4**

4. Attempt **any four** of the following : **16**

a) State any four different points which are taken into consideration for site selection of nuclear power station. **4**

b) What is the necessity of economizer and super heater in the thermal power plant ? **4**

c) A generating station has a connected load 120 MW and it supplies a maximum demand 60 MW. The number of units generated in a year are 48×10^7.

Calculate :

a) The load factor

b) The demand factor of the generating station. **4**

d) Explain how power is generated using solar energy ? **4**

e) Distinguish between run off river plants without pondage and with pondage. (any four points). **4**

f) Compare jet condenser with surface condenser for initial cost, maintenance cost, space required for condensation. **4**

Marks

5. Attempt **any four** of the following : **16**

a) State methods of nuclear waste disposal. **4**

b) A generating station has following daily load cycle. **4**

Time (Hours)	0 - 6	6 – 10	10 – 12	12 – 16	16 – 20	20 – 24
Load (MW)	50	50	60	70	80	40

Draw the load curve and find (i) load factor (ii) kWH (iii) average demand (iv) maximum demand. **4**

c) With reference to diesel power plant, explain (i) Air intake system (ii) Engine fuel system. **4**

d) Compare conventional and non conventional sources of electrical energy with respect to (i) initial and running cost (ii) site (iii) sources of power (iv) overall efficiency. **4**

e) In a nuclear power station state the material used for fuel rods, control rods, moderator and shielding. **4**

f) Explain impulse turbines. **4**

6. Attempt **any four** of the following : **16**

a) Explain nuclear reactor with diagram. **4**

b) Explain the concept of water hammering in penstock in hydro electric power station and how it can be reduced ? **4**

c) State any four merits and demerits of diesel power station. **4**

d) What is boiling water reactor ? Explain with diagram. **4**

e) Why overall efficiency of thermal power station is low ? How can it be increased ? **4**

f) Explain schematic arrangement of hydroelectric power station with diagram. **4**
