22566

23124

3 Hours / 70 Marks Seat No. | | | | | | | | |

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.

Marks

1. Attempt any FIVE : **5 × 2 = 10**

(a) Name any four components of diesel power plant.

(b) State the types of FBC boiler.

(c) State any four limitations of thermal power plant.

(d) State the necessity of waste heat recovery in thermal power plant.

(e) Name the regulating agencies for Nuclear power plant.

(f) Define the term 'Capacity Factor'.

(g) State importance of power plant.

2. Attempt any THREE : **3 × 4 = 12**

(a) Draw layout of hydroelectric power plant and explain its working.

(b) Explain with neat sketch working of La Mont boiler.

(c) Explain with neat sketch electro-static precipitators.

(d) Explain the term 'Tri-generation'. State its necessity in thermal power plant.

3. Attempt any THREE : **3 × 4 = 12**

(a) Discuss in brief, the maintenance of diesel power plant.

(b) Explain with neat sketch close cycle gas turbine power plant.

(c) Explain the need of co-generation with suitable example.

(d) Compare between Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR).

4. Attempt any THREE : **3 × 4 = 12**

(a) Explain world scenario of demand and supply of energy.

(b) Name any four nuclear plant situated in India with their capacity.

(c) List the factors to be considered while choosing the type of power plant.

(d) State any four applications of diesel power plant.

(e) A power station has two 40 MW units each running for 7000 hours a year and one 20 MW unit running for 1500 hours a year. The energy produced per year is 700×10^6 kWh.

Calculate :

(i) Plant Load Factor

(ii) Plant Use Factor

5. Attempt any TWO : **2 × 6 = 12**

(a) Draw a neat sketch of 'Benson Boiler'. Explain its constructional details.

(b) Draw Schematic diagram of boiler feed water control system. State its importance in thermal power plant.

(c) State different types of nuclear reactors. Explain the working of boiler water reactor with neat sketch.

6. Attempt any TWO : **2 × 6 = 12**

(a) Explain with neat sketch working principle of fluidized bed combustion (FBC) boiler.

(b) Write standard maintenance procedure of 'Gas Power Plant'.

(c) A power plant has following factor.

Peak load = 35 MW

Connected Load = 15, 10, 5, 7 MW

Capacity = 40 MW

Annual load factor = 50%

Estimate :

(i) Average Load

(ii) Energy Supplied

(iii) Demand Factor