

**Scheme – I**  
**Sample Question Paper**

**Program Name** : Diploma in Mechanical Engineering  
**Program Code** : ME  
**Semester** : Fifth  
**Course Title** : Power Plant Engineering (Elective)  
**Marks** : 70

**22566**

**Time: 3 Hrs.**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1) Attempt any FIVE of the following.**

**10 Marks**

- a) State the importance of Power plants
- b) Name any four components of FBC Boiler
- c) Classify Fuel handling system in Steam Power plants
- d) State the Necessity of Waste Heat recovery in Thermal power plants
- e) Name any two regulating Agencies for Nuclear power plants
- f) List different performance parameters of Power plants
- g) State any four advantages of Diesel Power Plants

**Q.2) Attempt any THREE of the following.**

**12 Marks**

- a) State the National Scenario of Demand and Supply of Energy
- b) Compare Lamont and Benson Boiler
- c) Explain the working of 'Open Type Gas Turbine with neat sketch.
- d) Explain the Term 'Trigeneration'? State its necessity in thermal power Plant

**Q.3) Attempt any THREE of the following.**

**12 Marks**

- a) Draw general layout of Hydro-Electric Power plant showing all components
- b) Explain the working of Electrostatic Principle with neat sketch

- c) Explain with neat sketch the working principle of Cogeneration
- d) Compare between Boiling water reactor(BWR) and Pressurized water Reactor (PWR)

**Q.4) Attempt any Three of the following.**

**12 Marks**

- a) Explain the maintenance procedure of Diesel generating set
- b) Name any four Nuclear power plant situated in India with their Capacity
- c) List the factors on size of generation units of power plant depends
- d) State any four applications of Diesel Electric power plants
- e) Thermal power plants consists of two 50 MW units, each running at 6000 hours and one 20MW units runs at 3000 hours per year. Energy produced by the plant is  $840 \times 10^6$  kWh per year. Find Plant load factor and plant use factor.

**Q.5) Attempt any TWO of the following.**

**12 Marks**

- a) Explain the constructional feature of Schmidt Hartman boiler with neat sketch
- b) Draw schematic Diagram of Boiler Feed water control system. State its importance in thermal power plant
- c) Draw a layout of Boiling water reactor Nuclear plant. State the functions of each component

**Q.6) Attempt any TWO of the following.**

**12 Marks**

- a) Explain the Indian Boiler Regulation (IBR) act. Name the inspecting and competent authority suggested by IBR
- b) Draw a layout of Typical Fuel Handling System used in Thermal Power Plant. Name the different components used in Fuel Handling system.
- c) Peak load on power plant is 60 MW. The load having maximum demand 30MW, 20MW, 10MW and 14MW connected to power plant. The capacity of power plant is 80 MW and load factor 0.5. Estimate
  - i. Energy supplied per year
  - ii. Demand factor
  - iii. Diversity factor

**Scheme – I**  
**Sample Test Paper - I**

**Program Name** : Diploma in Mechanical Engineering  
**Program Code** : ME  
**Semester** : Fifth  
**Course Title** : Power Plant Engineering (Elective)  
**Marks** : 20

**22566**

**Time: 1 Hour**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1 Attempt any FOUR.**

**08 Marks**

- a. List different types of Power plant
- b. State the term Demand and supply of energy
- c. Define High pressure Boiler
- d. State the need of IBR
- e. Name any four control systems used in Steam Power plant
- f. State the advantaged of Gas power plant

**Q.2 Attempt any THREE**

**12 Marks**

- a. List the advantages and disadvantages of Hydro electric power plant
- b. Explain with neat sketch the principle of FBC with neat sketch
- c. List any four desirable characteristics of elements used in Temperature control system in power plants
- d. Compare open and close gas turbine

**Scheme – I**  
**Sample Test Paper - II**

**Program Name** : Diploma in Mechanical Engineering  
**Program Code** : ME  
**Semester** : Fifth  
**Course Title** : Power Plant Engineering (Elective)  
**Marks** : 20

**22566**

**Time: 1 Hour**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1 Attempt any FOUR.**

**08 Marks**

- a. State the need of Cogeneration
- b. Explain term Waste heat recovery
- c. Name any four fuels used in Nuclear power plant
- d. State the functions of International Atomic Energy Agency
- e. Define Load factor
- f. List the factors on cost of power generation depends

**Q.2 Attempt any Three.**

**12 Marks**

- a. Explain with neat sketch the working of waste heat recovery system in thermal power plant
- b. Compare PWR and BWR
- c. State the procedure to determine the cost of energy per kWh