Code No: **RT42033D** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) List different grades of coal. [4]
   b) Enumerate advantages of super charging. [4]
   c) Explain hydrological cycle. [3]
   d) Define radioactivity. [3]
   e) What is base load and peak load power plants? [4]
   f) What is maximum demand and demand factor? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain with a simple sketch working of travelling grate stoker with its limitations. [8]
   b) What are problems caused by impurities in feed water in a boiler? [8]

3. a) Explain with a neat diagram, working of CRDI system. [8]
   b) Derive an expression for optimum pressure ratio for maximum workout from gas turbine. [8]

4. a) Explain with a simple sketch, working of high hydro electric power plant. [8]
   b) What are surge tanks and why are they essential in hydro electric power plant. [8]

5. a) Explain with relevant sketch, concept of chain reaction. [8]
   b) What are nuclear wastes and how it can be handled? [8]

6. a) What are the discrete advantages of combined operation power plants? [8]
   b) Explain briefly working of exhaust gas analyzer. [8]

7. a) What is a load curve and its significance? [8]
   b) Briefly discuss about different types of effluents from power plants. [8]

Code No: **RT42033D** **R13** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) Write advantages of mechanical coal handling systems. [4]
   b) Explain basic criteria for exhaust system in Diesel power plant. [4]
   c) What are the functional requirements of spillways? [3]
   d) Define binding energy. [3]
   e) What are the requirements of base load power plant? [4]
   f) What is utilization factor and plant capaacity factor? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain with a simple sketch, working of a cyclone separator. [8]
   b) Distinguish between forced draught and induced draught cooling towers. [8]

3. a) Explain with a simple sketch, working of fuel injection pump. [8]
   b) Discuss with relevant sketch working of regenerative gas turbine cycle. [8]

4. a) What are the different types of conduits used in hydro electric plant? Explain them in detail. [8]
   b) Explain briefly how turbines are classified in hydro electric plant. [8]

5. a) Explain systematically how fertile materials can be converted into fissionable materials? [8]
   b) Explain with a simple sketch working of a sodium graphite reactor. [8]

6. a) Describe briefly hydro electric storage plant in combination with steam plants with relevant sketches. [8]
   b) Explain with schematic diagram how measurement of oxygen is done in power plants. [8]

7. a) Discuss briefly on criteria for optimum loading of power plants. [8]
   b) What are the factors which influences economics of generation and distribution? [8]

Code No: **RT42033D** **R13** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) What are advantages of pulverized fuel firing system? [4]
   b) Compare steam power plant with gas turbine plant. [4]
   c) What are draft tubes? [3]
   d) Differentiate between fission and fusion. [3]
   e) What are the commonly used instruments in power plants? [4]
   f) What is load factor and diversity facor? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain with a simple sketch working of thermal power plant. [8]
   b) What are the methods available for feed water treatment, explain them briefly? [8]

3. a) Discuss with a simple sketch, thermostat cooling system in Diesel power plant. [8]
   b) Explain with a schematic diagram working of a combined cycle. [8]

4. a) Briefly discuss how hydro electric plants are classified. [8]
   b) Draw and explain governing system in impulse turbine. [8]

5. a) Explain with a simple sketch, working of gas cooled reactor. [8]
   b) What are the advantages and disadvantages of nuclear power plants? [8]

6. a) Explain briefly how hydro electric plant can be coordinated nuclear power plant. [8]
   b) What are the different types of hygrometers used in power plants, Explain in detail? [8]

7. a) Discuss briefly the methods to reduce power generation costs. [8]
   b) Explain briefly the impact of pollution on environment. [8]

Code No: **RT42033D** **R13** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) Explain the principle of operation of underfeed stoker. [4]
   b) Write functional requirements of combustion chamber in gas turbine plant. [4]
   c) Define cavitation. [3]
   d) Explain the future of nuclear power plants in India. [3]
   e) List advantages of combined working power plants. [4]
   f) What are the different types of electrical loads? [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are belt conveyors and what are its advantages and limitations? [8]
   b) What are the advantages of mechanical draught in a boiler? [8]

3. a) Discuss briefly the effects of supercharging on performance of Diesel power plant with relevant sketches. [8]
   b) Discuss briefly methods available for improving thermal efficiency of a gas turbine plant. [8]

4. a) Explain with a simple sketch, working of pumped storage plant. [8]
   b) Discuss briefly on different types of draft tubes used in hydro electric plant. [8]

5. a) Explain with suitable sketches working of a nuclear reactor. [8]
   b) Discuss briefly the safety measures for nuclear power plants. [8]

6. a) Explain briefly how run off river plant be coupled with thermal power plant? [8]
   b) Explain the construction and working of Orsat apparatus. [8]

7. a) Briefly discuss on cost analysis of any power plant. [8]
   b) Discuss briefly methods available to control pollution from power plants. [8]