Code No: **R1641034** **R16** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February- 2020

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 FOUR questions from Part-B

*****

PART–A *(14 Marks)*

1. a) What are the different grades of coal? [3]
   b) Write the advantages of super charging. [2]
   c) Classify hydraulic turbines. [3]
   d) Define binding energy and mass defect. [2]
   e) What is a base load power plant? [2]
   f) Define load factor. [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the steam and flue gas circuit in a modern steam power plant with a relevant sketch. [7]
   b) What are the types of dust collectors available? Explain why Electrostatic Precipitator is most preferred dust collection system in thermal power plants. [7]

3. a) Discuss briefly the working of common rail injection system with a simple sketch. [7]
   b) Explain with relevant diagram how regeneration can improve thermal efficiency of gas turbine plant. [7]

4. a) Define precipitation, evaporation and runoff and how these are inter related. [7]
   b) What is the purpose of governing and explain briefly governing of impulse turbine with a simple sketch. [7]

5. a) What is a moderator? Discuss briefly their advantages and limitations. [7]
   b) Draw and explain the functions of different components in a nuclear reactor. [7]

6. a) Explain briefly the concept of load sharing between base load and peak load power plants. [7]
   b) Draw and explain electrical method of determining carbon dioxide concentration in exhaust gas. [7]

7. a) A generating station supplies the following loads; 15MW, 12MW, 8MW, and 0.5MW. The station has a maximum demand of 20MW and annual load factor of 0.5. Estimate (i) number of units supplied annually (ii) Diversity factor. [7]
   b) Briefly discuss methods for controlling land pollution. [7]

||''|'''|''|'|''''||