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

IV B.Tech I Semester Advanced Supplementary Examinations, May - 2022

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) List the essentials of a good boiler. [3]
   b) What are combined cycles? [2]
   c) Explain how run off can be estimated. [3]
   d) Define isotope and half life. [2]
   e) Significance of water purity in power plants. [2]
   f) Define maximum demand and demand factor. [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the working of underfeed stroker firing system with their relative merits and demerits. [7]
   b) Why feed water treatment is considered essential in a thermal power plant, Comment? [7]

3. a) Explain briefly compressed air starting system in Diesel power plant. [7]
   b) List out and explain the variables which influences thermal efficiency of gas turbine plant. [7]

4. a) Discuss how hydrograph and flow duration curve be useful for a hydro electric power plant. [7]
   b) What is the function of hydraulic turbine and how are they classified? [7]

5. a) Differentiate between PWR and BWR. [7]
   b) Why shielding of nuclear reactor is essential and briefly explain thermal shielding of nuclear reactors. [7]

6. a) Explain the criteria for combining pump storage plant with nuclear power plant in detail. [7]
   b) Explain with relevant sketches working of dust monitoring systems. [7]

7. a) The annual peak load on a 40MW power station is 30MW. The power station supplies load having a maximum demand of 15MW, 9MW,7MW and 5MW. The annual load factor is 0.5. Calculate (i) Average load (ii) Energy supplied per year (iii) Diversity factor (iv) Demand factor. [7]
   b) What are the sources of air pollution and methods to control it? [7]