

B.E. (Mech) C Sem-VIII) (CBCGS) (P-2019) May-2023

(3 Hours)

[Total Marks: 80]

- N.B.: (1) Question No. 1 is compulsory.
 (2) Answer any three from the remaining five questions.
 (3) Assumptions made if any should be justified.
 (4) Figures to the right indicate full marks.

1. Answer any four of the following.

[20]

- Explain load curve and load duration curve.
- Differentiate between run-off river plants without and with pondage.
- Write short note on base load and peak load plants.
- Explain the parameters affecting the thermodynamic efficiency of combined cycles.
- Write short note on surge tank with neat sketch.

2. a) Explain pumped storage power plant with neat sketch.

[10]

- b) The peak load on a power plant is 60 MW. The loads having maximum demand of 30 MW, 20 MW, 10 MW and 14 MW are connected to the power plant. The capacity of the power plant is 80 MW and the annual load factor is 50%. Determine i) Average load on the plant ii) Energy supplied per year iii) Demand factor and iv) Diversity factor.

[10]

3. a) Discuss the various method of improving the performance of a gas turbine power plant.

[10]

- b) Discuss Rankine cycle with the help of schematic, (T-s) and (h-s) diagram. Write the expressions for efficiency, work ratio, heat rejected.

[10]

4. a) The average rate of inflow during 12 months for a river is as under.

Month	Inflow (m ³ /sec)	Month	Inflow (m ³ /sec)
Jan	800	Jul	2400
Feb	1000	Aug	2400
Mar	600	Sep	1200
Apr	400	Oct	600
May	600	Nov	600
Jun	1200	Dec	1000

Plot the hydrograph and determine the following-

- Average Flow
- Power developed under a head of 160 m, if overall efficiency is 88%
- Capacity of storage required for one year

Neglect losses due to evaporation, seepage etc. Assume each month is of 30 days.

- b) What do you understand by the term tariff ? Explain the Blockmeter rate, Hopkinson demand rate, and Doherty rate of tariffs. **[10]**
5. a) Explain BWR. How does it differ from PWR. **[10]**
b) With the help of flow chart explain coal handling system. **[10]**
6. a) Classify nuclear reactors. Explain CANDU Reactor with neat sketch. **[10]**
b) Prove that for economical load sharing in a power plant, the incremental rate (dl/dL) of all power generation units must be equal. **[10]**
-