BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.Tech **SEMESTER : VI**
BRANCH: MECHANICAL Eng. **SESSION:SP/2024**

SUBJECT: ME359 POWER PLANT ENGINEERING

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Explain briefly the principal types of power plants.	[5]	CO-1	L-1
Q.1(b)	Discuss the importance of central power station. Also state the advantages and disadvantages of hydro-electric power plant.	[5]	CO-1	L-2
Q.2(a)	Explain the following terms: (i) Economiser (ii)Super heater(iii) Air-preheater (iv)Condenser(v) Cooling tower	[5]	CO-2	L-1
Q.2(b)	Enumerate and explain the steps involved in handling of coal.	[5]	CO-2	L-1
Q.3(a)	Describe with neat sketch combined gas turbine and steam power plant using heating feed water with exhaust gases.	[5]	CO-3	L-1,3
Q.3(b)	Name the components of gas turbine power plant. Also explain with neat sketch working of simple gas turbine power plant.	[5]	CO-3	L-1,3
Q.4(a)	What are the homogeneous and heterogeneous reactor? Explain the characteristic features of a BWR (Boiling Water Reactor).How does BWR differ from PWR (Pressurized Water Reactor)?	[5]	CO-4	L-1
Q.4(b)	Name the components of a tidal power plant and briefly discuss the working of a single basin tidal power plant.	[5]	CO-4	L-2
Q.5(a)	What is combined operation system of power plant? Briefly discuss the advantages of combined power plant.	[5]	CO-5	L-2
Q.5(b)	The two power station X and Y supply power to a system whose maximum and minimum loads are 120 MW and 12 MW respectively. The estimated cost of these stations are as follows: C_X = Rs. (120 x KW + 0.028 x KWh) C_Y =Rs. (115 x KW + 0.032 x KWh) If the load varies as a straight line, find the installed capacities of each power station.	[5]	CO-5	L-5

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