

MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL

A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (MECHANICAL ENGINEERING) END SEMESTER EXAMINATIONS, APRIL/MAY 2017

SUBJECT: POWER PLANT ENGINEERING [MME 4031]

REVISED CREDIT SYSTEM (29 / 04 /2017)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

(a) Plant capacity factor (b) Diversity factor

- Missing data may be suitably assumed.
- **1A.** Define the following with suitable mathematical expressions:

04

1B. The maximum demand of a power station is 96000 kw and the daily load curve is described as follows:

Time	0-6	6-8	8-12	12-14	14-18	18-22	22-24	
(hrs.)								
Load	48	60	72	60	84	96	48	03
(MW)								

(a) Determine the load factor of power station (b) what is the load factor of standby equipment rated at 30 MW that takes up all load in excess of 72 MW? Also calculate its use factor.

- 1C. Enumerate the merits and demerits of Hydel power plants over Thermal power plants.03
- 2A. Sketch and explain the principle of working of Benson boiler. 04
- 2B. What are 'Surge Tanks'? List out the functions of a surge tank in a hydel power plant.03
- **2C.** With the help of a neat sketch explain the working of chain grate stoker. **03**
- **3A.** Sketch and explain the working of natural draught cooling tower. **04**

3B.	Explain in detail the unique features of High Pressure Boilers.	03
3C.	List out the advantages and disadvantages of Diesel engine plants.	03
4A.	Sketch and Compare the working of open and closed cycle gas turbine plant.	04
4B.	Write a note on: (a) Rock-fill dams (b) Buttress dam	03
4C.	Sketch and explain the working of a Pressurized Water Reactor.	03
5A.	Sketch and explain the principle of pneumatic ash handling equipment.	04
5B.	Sketch and explain in detail the main parts of a nuclear reactor.	04
5C.	Write a brief note on breeder reactor.	02