

HALL TICKET NUMBER

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PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE  
(AUTONOMOUS)

IV B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH-2023  
POWER PLANT ENGINEERING  
(ME Branch)

Time: 3 hours

Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

**PART-A**Answer **all** the questions in Part-A (5X2=10M)

| Q.No. | Questions   | Marks | CO | KL |
|-------|---|-------|----|----|
| 1.    | a) What are the advantages of artificial draught over natural draught?  | [2M]  | 1  |    |
|       | b) Distinguish between open cycle and closed cycle turbine plants.      | [2M]  | 2  |    |
|       | c) Differentiate between dams and spillways used in hydroelectric power | [2M]  | 3  |    |
|       | d) What is base load and peak load power plants?                        | [2M]  | 4  |    |
|       | e) Difference between demand and diversity factor.                      | [2M]  | 5  |    |

**PART-B**Answer **One Question from each UNIT (5X10=50M)**

| Q.No.    | Questions  | Marks | CO | KL |
|----------|--|-------|----|----|
| UNIT-I   |  |       |    |    |
| 2.       | a) Explain in detail with relevant sketch, the working of high pressure boiler.  | [5M]  | 1  |    |
|          | b) Explain the working of single retort stoker with neat sketch  | [5M]  | 1  |    |
| OR       |  |       |    |    |
| 3.       | a) What are problems caused by impurities in feed water in a boiler?   | [5M]  | 1  |    |
|          | b) Discuss the need for energy audit.  | [5M]  | 1  |    |
| UNIT-II  |  |       |    |    |
| 4.       | a) Describe the most commonly used starting systems used in diesel power plants.   | [5M]  | 2  |    |
|          | b) Explain the method used for super charging the engine.  | [5M]  | 2  |    |
| OR       |  |       |    |    |
| 5.       | a) Explain briefly the methods available to improve thermal efficiency of gas turbine power plant.   | [5M]  | 2  |    |
|          | b) What are the essential components of a simple open cycle gas turbine plant? How inter cooling and regeneration help in improving thermal efficiency of the plant? | [5M]  | 2  |    |
| UNIT-III |  |       |    |    |
| 6.       | a) What is Hydrological cycle? Explain its significance in locating the site and design of hydroelectric power plants  | [5M]  | 3  |    |
|          | b) What is a spillway? Why are spillways required? What are the different types of spillways?  | [5M]  | 3  |    |
| OR       |  |       |    |    |
| 7.       | a) Explain the factors affecting the run-off in hydrological cycle.  | [5M]  | 3  |    |
|          | b) Explain the working of pump storage with neat sketch.   | [5M]  | 3  |    |
| UNIT-IV  |  |       |    |    |

|        |    |  |      |   |  |
|--------|----|--|------|---|--|
| 8.     | a) | What are the different moderators used in a nuclear power plant. What properties make them suitable as moderators? | [5M] | 4 |  |
|        | b) | Explain with a simple sketch, the working of gas cooled reactor with relative advantages.                          | [5M] | 4 |  |
| OR     |    |  |      |   |  |
| 9.     | a) | Explain with relevant sketch, concept of chain reaction.   | [5M] | 4 |  |
|        | b) | What are the general problems of reactor operation?  | [5M] | 4 |  |
| UNIT-V |    |  |      |   |  |
| 10.    | a) | Define peak load, demand factor, load factor and plant use factor.   | [5M] | 5 |  |
|        | b) | Explain briefly various methods of pollution.  | [5M] | 5 |  |
| OR     |    |  |      |   |  |
| 11.    | a) | Briefly discuss about different types of effluents from power plants.  | [5M] | 5 |  |
|        | b) | Differentiate between fixed cost and running cost in an organization.  | [5M] | 5 |  |

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