



# BRAINWARE UNIVERSITY

**Term End Examination 2023**

**Programme – Dip.EE-2018/Dip.EE-2019/Dip.EE-2021**

**Course Name – Power Plant Engineering**

**Course Code - DEE405**

**( Semester IV )**

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Brainware University  
Barasat, Kolkata -700125**

**Full Marks : 60**

**Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

**Group-A**

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Which plants supply the peak load for the base power plants?
 

a) Mini hydel plants	b) Pump storage power plants
c) Low head plants	d) Run-off river power plants
- (ii) State what is the main function of economizer of a boiler plant
 

a) to increase steam production	b) to reduce fuel consumption
c) to increase steam pressure	d) to increase life of the boiler
- (iii) Tell that load duration curve indicates
 

a) the variation of load during different hours of the day	b) total number of units generated for the given demand
c) total energy consumed by the load	d) the number of hours for which the particular load lasts during a day
- (iv) Express size and cost of installation depends upon
 

a) average load	b) square mean load
c) maximum demand	d) square of peak load
- (v) State what is Demand factor?
 

a) Ratio of connected load to maximum demand	b) Ratio of average load to connected load
c) Ratio of maximum demand to the connected load	d) Ratio of kilowatt hour consumed to 24 hours
- (vi) Steam turbine governing can be defined as \_\_\_\_\_
 

a) controlling the flow rate of steam	b) increasing the steam speed
c) adjusting the governors for particular speeds	d) none of the mentioned
- (vii) Choose in a hydro-electric plant, spillways are used \_\_\_\_\_
 

a) To discharge all surplus water	b) To discharge surplus water on the downstream side of dam
c) Water is not available in sufficient quantity	d) None of the above



- (viii) Choose that most of the renewable energy sources are \_\_\_\_\_
- a) location-specific  
b) universally available  
c) highly efficient  
d) polluting
- (ix) Select which is the cheapest plant in operation and maintenance
- a) Steam power plant  
b) Nuclear power plant  
c) Hydro-electric power plant  
d) None of the above
- (x) Identify that the annual depreciation of a hydro power plant is about \_\_\_\_\_
- a) 0.5% to 1.5%  
b) 10% to 15%  
c) 20% to 25%  
d) 15% to 20%
- (xi) Tell what will be the running cost of hydro-electric power plant is \_\_\_\_\_ paise per unit
- a) 10  
b) 5  
c) 15  
d) 8
- (xii) Tell what is in the Evaporative type of condenser.
- a) steam in pipes surrounded by water.  
b) water in pipes surrounded by steam outside  
c) water in pipes surrounded by steam outside.  
d) steam and cooling water mixed to give condensate.
- (xiii) Identify which statement about surge tank is wrong?
- a) Ideal location of surge tank is at the turbine inlet  
b) A decrease in load demands cause a rise in water level in surge tank  
c) Surge tanks are totally closed to avoid entry of unwanted objects to penstock  
d) Surge tanks are installed to reduce harm effects of water hammer phenomenon
- (xiv) Select which element of hydroelectric power plant prevents the penstock from water hammer phenomenon?
- a) Valves and Gates  
b) Draft tubes  
c) Surge Tank  
d) Spillway
- (xv) Identify flat plate collector absorbs.....
- a) Direct radiation only  
b) Diffuse radiation only  
c) Direct and diffuse both  
d) All of the above

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. Tell about the function of induced draught fan? (3)
3. List down the basic factors to be considered for the design of a nuclear power reactor? (3)
4. Explain the function of cooling tower? (3)
5. Explain about the surge tank? (3)
6. Explain the advantages and limitations of solar power plant? (3)

OR

Differentiate the impulse and reaction turbine. (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. Write a brief note on types of reactors with the help of neat sketch? (5)
8. Explain briefly the methods of electrical power generation. (5)
9. A generation station has a maximum demand of 20 MW, a load factor of 60%, plant capacity factor of 48% and plant use factor of 80%. Calculate 1. The daily energy produced  
2. The reserve capacity (5)
10. Describe the factors to be considered while selecting the site of a hydro power plant? (5)

11. Explain the construction and working of Geo thermal power plant. (5)
12. Show and explain the I-V & PV characteristics under different parameters of a one diode model. (5)

OR

How ash is handled in the power plant? Explain the ash handling system. (5)

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