



BRAINWARE UNIVERSITY

Term End Examination 2023-2024 Programme – Dip.EE-2022 Course Name – Renewable Energy Power Plants Course Code - DEEPE401A (Semester IV)

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) Identify the correct alternative for low head hydro plant.
- (i) Identify the correct alternative for low head hydro plant.
 - a) Canal power plant

b) Medium head hydro-plant

c) Run-off river hydro-plant

- d) Base load hydro plant
- (ii) Identify from the following is not a disadvantage of Hydro Power
 - a) A large land area submerges into the water leading to deforestation
- b) It causes dislocation of a large population and rehabilitation
- c) It causes ecological disturbances like earthquake
- d) It causes calamities like landslides
- (iii) Select in hydroelectric power, what is necessary for the production of power throughout the year?
 - a) Dams filled with water

b) High amount of air

c) High intense sunlight

- d) Nuclear power
- (iv) Identify the main composition of biogas is
 - a) Methane

b) Carbon dioxide

c) Nitrogen

- d) Hydrogen
- (v) Identify from where the product gas removed from the low temperature zone undergoes before being used as fuel in combustion for electricity generator.
 - a) liquefaction

b) condensation

c) evaporation

- d) cleaning
- (vi) Select the biomass material and gasification agent fed into a downdraft gasifier is
 - a) Biomass from top, gasifying agent from top
- b) Biomass from top, gasifying agent from
- c) Biomass from bottom, gasifying agent from left side
- d) Biomass from top, gasifying agent from right side
- (vii) Select the potential application of wind energy is
 - a) Converting heat to wind energy
- b) Converting electrical energy to wind energy

	c) Transportation of electrical energy	cars into electricity on highways	eding	
	(viii) Concentrated solar powered systems defined	DI SYSTEM O	Y Usina	
	 a) Systems that use only a small concentrated portion of sunlight c) Systems that generate solar power by using mirrors and lenses to absorb concentrate a large area of sunlight onto an absorber 	photovoltaics d) Systems that generate solar power b mirrors and lenses to concentrate a l area of sunlight onto a receiver	V Using	
	(ix) Judge the demand for renewable sources of e	b) Because of low or zero carbon footp	rint	
	 a) Because they emit greenhouse gases c) Because of the decreasing global temperatures 	d) Because they are more efficient		
	temperatures (x) The working of central receiver thermal power	r system associated with the steps are		
	 a) Sunlight → heliostats absorb solar flux → central receiver → turbine system → electricity 	central receiver → turbine system → electricity	•	
	 c) Heliostats reflect solar flux → sunlight → turbine system → central receiver → 	 d) Heliostats reflect solar flux → sunligender such such descriptions. d) Heliostats reflect solar flux → sunligender such such descriptions. d) Heliostats reflect solar flux → sunligender such such descriptions. d) Heliostats reflect solar flux → sunligender such such descriptions. e) Heliostats reflect solar flux → sunligender such such such descriptions. e) Heliostats reflect solar flux → sunligender such such such such such such such such		
	(xi) Choose the operating temperature of turbine system is			
	a) 10 – 100 degree C	b) 5000 degree C		
	c) 500 – 800 degree C	d) 200 – 500 degree C		
	(xii) Line focus collector used in a distributed power system is named as			
	a) Parabolic mirrors	b) Convex mirrors		
	c) Concave lenses	d) Linear fresnel reflector		
	(xiii) Predict the capacity of mini hydro power plan	b) 101kW-1000kW		
	a) upto 100kW c) 1001kW-2000kW (xiv) Kaplan turbine is named as	d) 6000kW-10000kW		
	a) axial flow turbine	b) inward flow turbine		
	c) tangential flow turbine	d) mixed flow turbine		
	(xv) Identify the name of the turbine has highest	speed		
	a) Pelton wheel turbine	b) Francis turbine		
	c) Impulse turbine	d) Kaplan turbine		
	Group-B			
		r Type Questions)	3 x 5=15	
	2. Describe about concentrated solar power (CSP)).	(3)	
3. Describe the construction of direct type wind turbine.			(3)	
	4. Explain with diagram the use of surge tank.5. Describe in brief about Vertical Axis Wind Turbine or VAWT.		(3)	
			(3)	
	6. Draw and explain the block diagram of wind-so	olar plant.	(3)	
		OR		
	Calculate the amount of generated power in the wind generator.		(3)	
	G	iroup-C		
		er Type Questions)	5 x 6=30	

8. 9.	Explain the process of electricity generation by a molten salt solar tower power plant. Describe off grid solar system with block diagram. Discuss the working principle of Horizontal Axis Wind Turbine. Explain the working principle of Pyrheliometer. Explain IV characteristics of solar cell.	(5) (5) (5) (5) (5)
12.	Sketch and explain the updraft gasifier with explanation.	(5)
	OR Explain the construction of the crossdraft gasifier.	(5)