



BRAINWARE UNIVERSITY

Programme – Dip.ME-2021
Course Name – Renewable Energy
Course Code - DME606B
(Semester VI)

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

- Choose the correct alternative from the following :
- (i) Choose the type of solar collector that generates electricity directly from sunlight.
 a) Flat-plate collector
 b) Parabolic trough collector
 c) Photovoltaic collector
 d) Evacuated tube collector
 (ii) Name the primary semiconductor material used in most photovoltaic cells.

a) Silicon

b) Copper

c) Aluminum

- d) Cadmium
- (iii) Name the component responsible for converting direct current (DC) generated by solar panels into alternating current (AC) for use in households.
 - a) Inverter

b) Converter

c) Rectifier

- d) Transformer
- (iv) Name the layer on the surface of solar panels that protects the cells and enhances light absorption.
 - a) Glass cover

b) Anti-reflective coating

c) Metal frame

- d) Junction box
- (v) Name the material used for making rotor blade of a wind turbine.
 - a) Glass fiber reinforced polyester

b) Salt

c) Sugar

- d) Plastic
- (vi) Select the process of converting organic waste into energy-rich biogas and biofertilizers.
 - a) Fermentation

b) Combustion

c) Gasification

- d) Gasification
- (vii) State the main function of gearbox in a wind turbine system.
 - a) Multiples rotation speed to generate electricity.
- b) Divides rotation speed to generate electricity.
- c) Multiples rotation speed to consume wind energy.
- d) Divides rotation speed to consume wind energy.

energy systems.	ne implementation of hybrid renewable	
a) Residential c) Agricultural (ix) State which of the following is not a pillar of su	b) Industrial d) Transportation ustainable development.	
 a) Environmental sustainability c) Economic growth (x) State which of the following organizations deal India. 	b) Social equity d) Political dominance	
 a) Geological Survey of India c) Forestry Department (xi) Name the gas that is commonly used as the fue 	b) Geological Society of India d) Ministry of external affairs el in hydrogen fuel cells.	
 a) Methane c) Carbon dioxide (xii) Select the correct definition of diffused solar ra 	b) Hydrogen d) Nitrogen	
 a) Sum of direct and reflected radiation energies. 	b) Radiation reflected from an obstacle.	
c) Radiation traveling on a straight line from sun to earth.	d) Radiation scattered by molecules.	
(xiii) State the main problem in using hydrogen as fu	el for vehicles.	
 a) Capital intensive c) Fuel cell technology is not well established (xiv) State the reason due to which LED bulbs are co 	b) Storage d) Cars will become heavy nsidered energy-efficient.	
 a) Produce more heat than light c) Consume less energy and have a longer lifespan 	 b) Use more electricity than traditional b d) Emit harmful radiation 	ulbs
(xv) State which action contributes to energy conser	rvation in transportation.	
a) Carpoolingc) Frequent engine idling	b) Increasing vehicle speed d) Using premium gasoline	
Grou	- D	
Grou (Short Answer Ty		3 x 5=15
 Define energy and classify it. List out the various non-conventional energy source. Explain the importance of non-conventional energy. Explain the working principle of flat plate solar collection. Explain the construction and working of a concentration. 	y sources in context of global warming. lector. rating type solar collector.	(3) (3) (3) (3) (3)
Explain Photovoltaic Effect.		(3)
		(-)
Grou	·	
(Long Answer Ty	pe Questions)	5 x 6=30
 State few advantages of tidal energy. The efficiency of a single solar cell (10 cm x 10 cm and the solar insolation is 800 W/m^2. Calculate the circuit.) is 15.6%, it produces a voltage of 0.5V the amount of current that flows throug	(5) (5) h
Explain few applications of renewable energy.State the importance of renewable energy source development.	s in the context of sustainable	(5) (5)

7. 8.

9. 10.

11. If the diameter of a turbine is 24 m and the wind speed is 6 m/sec. Evaluate the power in	(5)
the wind considering the density of air to be 1.225 kg/m3. 12. With a neat sketch explain the construction of a flat plate solar collector.	(5)
OR With the help of a diagram show the formation of depletion layer in a PV cell.	(5)
