Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2019

OE00036 Renewable Sources of Energy

Programme: B.Tech. Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Identify the non-renewable energy resource from the following: **1**

(a) Coal (b) Fuel cells

(c) Wind power (d) Wave power

ii. Which energy accounts for largest share in the renewable energy basket of India? **1**

(a) Wind (b) Nuclear (c) Hydel (d) Solar

iii. The function of a solar collector is to convert **1**

(a) Solar Energy into Electricity

(b) Solar Energy into radiation

(c) Solar Energy into thermal energy

(d) Solar Energy into mechanical energy

iv. Photovoltaic cell or solar cell converts **1**

(a) Thermal energy into electricity

(b) Electromagnetic radiation directly into electricity

(c) Solar radiation into thermal energy

(d) Solar radiation into kinetic energy

v. At what range of speed is the electricity from the wind turbine is generated? **1**

(a) 100 – 125 mph (b) 450 – 650 mph

(c) 250 – 450 mph (d) 30-35 mph

vi. Geothermal energy is the thermal energy present **1**

(a) On the surface of the earth

(b) In the interior of the earth

(c) On the surface of the ocean

(d) None of these

P.T.O.

vii. Which of the following statement/s is/are correct? **1**

I. Biomass is a renewable energy resource derived from plants and animal waste.

II. However, burning of biomass increases atmospheric carbon dioxide.

(a) Only I (b) Only II

(c) Both I and II (d) None of these

viii. Which of the following is NOT a fossil fuel? **1**

(a) Biomass (b) Coal (c) Natural gas (d) Petroleum

ix. The ocean thermal energy conversion (OTEC) is uses _____ between the cold water and hot water to produce electricity. **1**

(a) Energy difference (b) Potential difference

(c) Temperature difference (d) Kinetic difference

x. The oceanic tides are due to _____. **1**

(a) Heavy Winds (b) Slight earth quakes

(c) Water force (d) Gravitational interaction

Q.2 i. What are the causes of Energy Scarcity? **2**

ii. What is scope of utilizing non-conventional sources of power generation in near future? **8**

OR iii. Describe in brief the principal sources of energy. Discuss the position of India with respect to these resources. **8**

Q.3 Attempt any two:

i. Draw a neat diagram showing all components of a flat-plate solar collector. explain the function of each **5**

ii. How solar photovoltaic cell works? Explain with the help of a suitable diagram. **5**

iii. Write short note on solar pond. **5**

Q.4 Attempt any two:

i. What factors are taken into consideration in site selection of wind energy conversion system. **5**

ii. Write short note on geothermal sources. **5**

iii. Describe the different sources and characteristics of solid waste. **5**

Q.5 i. Discuss the availability of biomass. **3**

ii. Compare various biomass conversion routes in brief. **7**

OR iii. State various types of biogas gasifier. Sketch and discuss any one type. **7**

Q.6 i. What is OTEC? **2**

ii. Explain the principle of Ocean Thermal Energy Conversion (OTEC) System. What are the advantages and limitations of OTEC? **8**

OR iii. State the present status of tidal power plants in India. What are the various difficulties in tidal power development? **8**

******

Marking Scheme
OE00036 Renewable Sources of Energy

Q.1	i.	Identify the non-renewable energy resource from the following: (a) Coal	**1**
	ii.	Which energy accounts for largest share in the renewable energy basket of India? (c) Hydel	**1**
	iii.	The function of a solar collector is to convert (c) Solar Energy into thermal energy	**1**
	iv.	Photovoltaic cell or solar cell converts (b) Electromagnetic radiation directly into electricity	**1**
	v.	At what range of speed is the electricity from the wind turbine is generated? (d) 30-35 mph	**1**
	vi.	Geothermal energy is the thermal energy present (b) In the interior of the earth	**1**
	vii.	Which of the following statement/s is/are correct? I. Biomass is a renewable energy resource derived from plants and animal waste. II. However, burning of biomass increases atmospheric carbon dioxide. (a) Only I	**1**
	viii.	Which of the following is NOT a fossil fuel? (a) Biomass (b) Coal (c) Natural gas (d) Petroleum	**1**
	ix.	The ocean thermal energy conversion (OTEC) is uses _____ between the cold water and hot water to produce electricity. (c) Temperature difference	**1**
	x.	The oceanic tides are due to _____. (d) Gravitational interaction	**1**
Q.2	i.	Causes of Energy Scarcity	**2**
	ii.	Scope of utilizing non-conventional sources of power generation in near future	**8**
OR	iii.	Principal sources of energy 4 marks Position of India with respect to these resources. 4 marks	**8**
Q.3		Attempt any two:	
	i.	Diagram of a flat-plate solar collector 2 marks Function 3 marks	**5**
	ii.	Solar photovoltaic cell works 3 marks Diagram 2 marks	**5**
	iii.	Solar pond.	**5**
Q.4		Attempt any two:	
	i.	Factors consideration in site selection of wind energy conversion system.	**5**
	ii.	Geothermal sources.	**5**
	iii.	Different sources of solid waste 3 marks Characteristics of solid waste 2 marks	**5**
Q.5	i.	Availability of biomass.	**3**
	ii.	Various biomass conversion routes	**7**
OR	iii.	Types of biogas gasifier 2 marks Sketch 2 marks Discuss any one type 3 marks	**7**
Q.6	i.	OTEC	**2**
	ii.	Principle of Ocean Thermal Energy Conversion (OTEC) System 4 marks Advantages and limitations of OTEC 4 marks	**8**
OR	iii.	Status of tidal power plants in India 4 marks Difficulties in tidal power development 4 marks	**8**

******