Printed Page:-2 Subject Code:- AMTME0113

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

M.Tech

SEM: I - THEORY EXAMINATION (2021 - 2022)

Subject: Renewable Energy System

Time: 03:00 Hours Max. Marks: 70

General Instructions:

1. All questions are compulsory. It comprises three Sections A, B and C.

- Section A - Question No- 1 is objective type question carrying 1 mark each & Question No- 2 is very short type questions carrying 2 marks each.
- Section B - Question No- 3 is Long answer type - I questions carrying 4 marks each.
- Section C - Question No- 4 to 8 are Long answer type - II questions carrying 7 marks each.
- No sheet should be left blank. Any written material after a Blank sheet will not be evaluated/checked.

SECTION A [5X1=5]

1. Attempt all parts:-

1-a. The full form of OPEC is …… (CO1) 1

1. Organization of the Petroleum Exporting Countries
2. Origin of the Petroleum Exporting Countries
3. Organization of the Petrol Exporting Countries
4. Organization of the Petroleum Exporting County

1-b. _____ collectors have mirror-like reflectors and an absorber at the focal point. (CO2) 1

1. Parabolic dish
2. Fresnel
3. Flat plate
4. All of the above

1-c. _____is the electric power obtained from the energy of the water. (CO3) 1

1. hydro power
2. water power
3. water energy
4. All of the above

1-d. The difference between gross head and friction losses is known as _____ (CO4) 1

1. net head
2. total head
3. both of the above
4. none of the above

1-e. Following is true for biomass and biofuels (CO5) 1

1. their contribution in reduction in CO2 emissions is limited
2. both emit large amount of air pollution when burned

3. they consume large amounts of water

4. all of the above

2. Attempt all parts:- [5X2=10]

2.a.	What is the use of spillway? (CO1)	2
2.b.	Define collector efficiency. (CO2)	2
2.c.	Explain different types of airfoils. (CO3)	2
2.d.	What are the prospects of renewable energy sources in India? (CO4)	2
2.e.	Define solar insulation. (CO5)	2

SECTION B [5X4=20]

3. Answer any five of the following:-

3-a.	What are the four main types of thermo-chemical processes? (CO1)	4
3-b.	How are windmills classified? What are the disadvantages of wind power?. (CO3)	4
3-c.	Enlist three phases involved in anaerobic digestion for biogas generation. (CO2)	4
3-d.	Explain ozone layer depletion problem. (CO2)	4
3.e.	Enlist obstacles to the implementation of renewable energy sources. (CO4)	4
3.f.	What are the factors affecting biogas generation? (CO4)	4
3.g.	What do you understand by energy farming?.(CO5)	4

SECTION C [5X7=35]

4. Answer any one of the following:-

4-a.	Which type of non-conventional energy source is best suitable for rural and agricultural applications and why? Explain in detail. (CO1)	7
4-b.	What are non-renewable energy resources? How it impacts the environment?.(CO1)	7

5. Answer any one of the following:-

5-a.	Explain the terms catchment area, rain fall and run off. (CO2)	7
5-b.	With the help of a schematic diagram, Explain the working of solar water heating? (CO2)	7

6. Answer any one of the following:-

6-a.	What are the different types of hydroelectric turbines? Explain the principal of working of each. (CO3)	7
6-b.	Compare fixed dome type biogas plant and floating drum type plant. (CO3)	7

7. Answer any one of the following:-

7-a.	Explain Vertical Axis Wind Turbine (VAWT). (CO4)	7
7-b.	What do you mean by community biogas plant? How is it useful for energy generation? (CO4)	7

8. Answer any one of the following:-

8-a.	Explain with a neat diagram the working of various types of wind generators. (CO5)	7
8-b.	With a neat diagram of a windmill, write its construction and working? (CO5)	7