Subject Code: BOE074

PAPER ID-310330

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2025-26
RENEWABLE ENERGY RESOURCES

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **02 x 7 = 14**

Q.No.	Question	CO	Level
a.	What do you mean by renewable energy?	1	K2
b.	Define photovoltaic effect.	1	K2
c.	What is solar radiation?	2	K2
d.	State Solar Irradiance and sun peak hours.	2	K2
e.	Write the chemical reaction takes place in Alkaline Fuel Cell.	3	K2
f.	What is meant by non-electrical geothermal conversion?	3	K2
g.	What do you mean by recycling?	5	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

a.	Explain the various non-conventional energy resources with their availability, classification, relative merits and demerits.	1	K2
b.	What is a flat plate solar collector? Explain its construction, working, materials used, applications and performance characteristics.	2	K2
c.	What are the resources of geothermal energy? Explain their types, availability, and distribution with suitable examples.	3	K2
d.	Explain the principle of thermo-electric energy conversion. Describe the working of a thermo-electric generator with performance analysis and limitations.	4	K2
e.	Discuss the availability of biomass resources in India. Explain their utilization for electricity, cooking and industrial applications.	5	K2

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the working of a solar cell power plant with neat layout and discuss its main components and limitations.	1	K2
b.	What is a solar cell array? Explain its types, necessity, connection methods and applications in generating large scale power.	1	K2

4. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain different types of focusing collectors. Discuss their working principle, materials, applications and performance parameters.	2	K2
b.	Explain thermal energy storage methods used in solar heating and cooling systems.	2	K2

5. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the principle, construction, and working of an MHD power plant with neat diagram. Also discuss its advantages.	3	K2
b.	What is a fuel cell? Explain the working of Hydrogen-Oxygen fuel cell with diagram, reactions, performance, and limitations.	3	K2

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6. Attempt any *one* part of the following: 07 x 1 = 07

a.	What are wind power sources? Explain site selection criteria for installing a wind energy conversion system (WECS).	4	K2
b.	What is meant by concentrators and augmenters? Explain their role in enhancing wind energy conversion and discuss their limitations.	4	K2

7. Attempt any *one* part of the following: 07 x 1 = 07

a.	What is OTEC? Explain its availability in oceans, working principle of an OTEC power plant and major components.	5	K2
b.	Explain the principle, construction, working, performance and limitations of wave energy conversion systems. Give suitable applications.	5	K2

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