PAPER ID-311283

Subject Code: BOE304

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

BTECH

(SEM III) THEORY EXAMINATION 2023-24

ENERGY SCIENCE & ENGINEERING

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

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

Q no.	Question	Marks	CO
a.	Define Heat Energy.	2	1
b.	Differentiate between Nuclear Fission & Nuclear Fusion.	2	2
c.	Write down the advantages of nuclear energy.	2	2
d.	Define Terrestrial Solar Radiation.	2	3
e.	List the different types of Solar cells.	2	3
f.	What are the applications of Geothermal Energy?	2	4
g.	What do you mean by Energy Storage?	2	5

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

a.	Explain in detail about quantum. Also explain the methodological process of energy quantization.	7	1
b.	What is Nuclear Binding Energy? Explain its reactions in detail.	7	2
c.	Discuss the different types of semiconductor materials. Also discuss the V-I Characteristics of p-n junction.	7	3
d.	What do you mean by dry system, wet steam and hot water geothermal systems? Explain with suitable diagram.	7	4
e.	Explain the following concepts in detail. i. Climate Change ii. Energy conservation	7	5

SECTION C

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

a.	Explain the principle of Steam and gas power cycles with neat sketch.	7	1
b.	Write a note on the following i. Entropy ii. Phase change energy conversion iii. Electromagnetic Energy	7	1

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

a.	Explain the details of nuclear fission reactor design and explain its working.	7	2
b.	Discuss the working principle of Nuclear forces & also outline the different energy scales used in Nuclear Energy.	7	2

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

a.	Write short note on following i. Limitations of SPV System ii. Building integrated photovoltaic's iii. P-V characteristics of SPV system.	7	3
b.	Explain in detail about various types of generation solar cells.	7	3

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6.	**Attempt any *one* part of the following:**	**7 x 1 = 7**	
a.	Explain the principle of closed cycle OTEC system with suitable diagram. State the limitations of OTEC System.	7	4
b.	What is the principle of wind energy conversion? What methods are used to overcome the fluctuating power generation of windmills?	7	4

7.	**Attempt any *one* part of the following:**	**7 x 1 = 7**	
a.	Define Energy Audit & Explain the concept of optimization of energy consumption.	7	5
b.	Write a short note on the following. i. LEED Ratings ii. Green Building concepts	7	5