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**BTECH**  
**(SEM IV) THEORY EXAMINATION 2021-22**  
**ENERGY SCIENCE AND ENGINEERING**

**Time: 3 Hours****Total Marks: 100****Notes:**

- Attempt all Sections and Assume any missing data.
- Appropriate marks are allotted to each question, answer accordingly.

SECTION-A	Attempt <b>All</b> of the following Questions in brief	Marks (10X2=20)	CO
Q1(a)	Comment the significance about heat and mechanical energy.		1
Q1(b)	State the importance of Electromagnetic Energy.		1
Q1(c)	Define fast breeder reactors.		2
Q1(d)	Comment about the reaction mechanism between the neutron decaying in the nuclear energy process.		2
Q1(e)	What is the source of energy in Sun?		3
Q1(f)	Define Solar Insulation		3
Q1(g)	What is angle of pitch?		4
Q1(h)	State Tip speed ratio.		4
Q1(i)	State the adverse effects about energy aspects towards climate change.		5
Q1(j)	Define energy management system.		5

SECTION-B	Attempt <b>ANY THREE</b> of the following Questions	Marks (3X10=30)	CO
Q2(a)	State Phase Energy conversion mechanism in the field perspective over the surroundings.		1
Q2(b)	Define briefly about Critical size, Critical Mass and Nuclear fusion process mechanism with suitable example.		2
Q2(c)	Explain in detail about various types of generation solar cells		3
Q2(d)	Identify the potential of geothermal energy, and how it can be extracted?		4
Q2(e)	Explain in detail about energy conservation and optimization of energy consumption.		5

SECTION-C	Attempt <b>ANY ONE</b> following Question	Marks (1X10=10)	CO
Q3(a)	Explain in detail about quantum. Also explain the methodological process of energy quantization.		1
Q3(b)	Describe in detail about photo, thermal and electrical aspects.		1

SECTION-C	Attempt <b>ANY ONE</b> following Question	Marks (1X10=10)	CO
Q4(a)	Define Nuclear force and Binding energy process happening in Nuclear fission. Explain the working of fission with the suitable example.		2
Q4(b)	State chain reaction. Explain the process happening in reaction with suitable sketch.		2

SECTION-C	Attempt <b>ANY ONE</b> following Question	Marks (1X10=10)	CO
Q5(a)	Define solar radiation and explain solar thermal power plant process mechanism with suitable diagram.		3
Q5(b)	Define Semiconductors. State Intrinsic and Extrinsic semiconductors along with carrier concentration.		3

SECTION-C	Attempt <b>ANY ONE</b> following Question	Marks (1X10=10)	CO
Q6(a)	Discuss in detail about Wind Turbine and its major components for the production of electricity.		4
Q6(b)	Describe in detail about Ocean thermal Energy Conversion and its classification.		4

SECTION-C	Attempt <b>ANY ONE</b> following Question	Marks (1X10=10)	CO
Q7(a)	Describe in detail about concept of green building and green architecture.		5
Q7(b)	Explain about Energy audit by mentioning its types and action plan for maintaining Energy management system.		5