Q. Code: 742140

Reg. No. | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Fifth/Seventh Semester

CH18001 – ENERGY ENGINEERING

(Chemical Engineering)

(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

CO 1 Apply the fundamentals of energy conversion and applications.
CO 2 Compare the various methodologies of tapping energy from non-conventional sources.
CO 3 Apply knowledge of mathematics, science, and engineering in energy conversion.
CO 4 Develop basic design of renewable energy systems.
CO 5 Demonstrate knowledge on energy conservation and management techniques.

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Give the basic unit to represent energy in electrical form.	**1**	**2**
2.	Mention any two schemes where it guarantees the energy sector growth at Indian landscape.	**1**	**3**
3.	Name any two conventional energy source and their alternate form.	**2**	**2**
4.	List the different type of hydel power plant based on mean sea level of particular location.	**2**	**2**
5.	State the reason why the tropical regions are preferred for wind farm in Southern India.	**3**	**3**
6.	Sketch the basic block diagram of solar thermal power station.	**3**	**2**
7.	Recollect on what basis the biomass energy is a sustainable energy.	**4**	**2**
8.	Mention any two advantages of fluidized bed reactor over fixed bed reactor.	**4**	**2**
9.	Relate the energy act and important duties of common people.	**5**	**2**
10.	State the necessity of energy audit for a ITES industry.	**5**	**3**

PART- B (5 x 14 = 70 Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	Discuss the role of energy alternatives in bridging the gap between energy supply and energy demand.	**(7)**	**1**	**3**
	(ii)	Outline the energy problems in India. Discuss briefly how economic growth and energy consumption in India is related.	**(7)**	**1**	**3**
		(OR)			
(b)		Mention the clean development mechanism can be implemented in coal power plants, as one like at Ennore Thermal Power station, Chennai.	**(14)**	**1**	**3**
12. (a)		Explain the process of nuclear power generation by using advanced reactors with the help of neat schematic diagram (s).	**(14)**	**2**	**3**
		(OR)			
(b)		Enumerate the potential benefits of the following energy sources along with their disadvantages which limits their application at near coastal regions, i.) Hydel Energy ii.) Nuclear Energy.	**(14)**	**2**	**3**
13. (a)		Describe the types of flat plate collector and explain its operating principle with a diagram for 2MWe energy production.	**(14)**	**3**	**3**
		(OR)			
(b)		Discuss the construction of the different types of windmill, which are feasible to install over higher mean sea level and mention its unique features and applications.	**(14)**	**3**	**3**
14. (a)		Distinguish the different thermal conversion processes of biomass.	**(14)**	**4**	**3**
		(OR)			
(b)		Describe the biochemical routes for conversion of biomass to (i) Biodiesel, and (ii) Alcohols. And confirm its selectivity for a rural areas of Tamil Nadu.	**(14)**	**4**	**3**
15. (a)		Explain the energy conservation guidelines provided by the Bureau of Energy Efficiency for the following (i) Combustion of Fuel (ii) Heating, Cooling and Heat Transfer	**(14)**	**5**	**2**
		(OR)			

(b)	Describe the process followed in the production of fertilizers and explain the suggested energy conservation and management practices in a fertilizer industry.	**(14)**	**5**	**2**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Construct the principle behind the energy generation from the following sources i.) Tides ii.) Ocean Also discuss their drawbacks which hinder their application in large-scale.	**(10)**	**3**	**5**

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