U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Program: B.E. **Semester: VI**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 19BT6OEATE **Max Marks: 100**
Course: Alternative Energy

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

			UNIT – I	CO	PO	Marks
1	a)		India is the second highest coal producing country in the world and fifth world's largest country in terms of coal deposits. Discuss the status of Coal reserves in India. List the challenges associated with the usage of coal.	*CO1*	*PO1*	**06**
	b)		Tabulate the problems associated with conventional energy sources.	*CO1*	*PO1*	**04**
	c)		What are the prospects of non-conventional energy in India? Tabulate the energy consumption in the State of Karnataka. Identify the types of renewable energy resources available based on geographical characteristics.	*CO2*	*PO2*	**10**
			UNIT – II			
2	a)		With neat diagram, explain the working of any two shoreline devices used to collect wave energy.	*CO1*	*PO1*	**10**
	b)		List the challenges associated with tidal power generation.	*CO1*	*PO1*	**05**
	c)		Determine the value of mean tidal power, if R_s= 5m, R_n=2.5m, alpha = 0.5m, R_{mean} = 3.7m, R_{max} = 5 m, R_{min}= 2.5m, A= 10km^2, density = 1000kg/m^3, τ = 12 h 25 min	*CO1*	*PO2*	**05**
			UNIT-III			
3	a)		A farmer with 50 pigs proposed to use biogas generated from their Waste for cooking the food. Identify the suitable anaerobic digester for the production of biogas. Explain the working of digester with neat diagram. Briefly comment on what other benefits (if any) might be gained by installing a digester.	*CO1*	*PO2*	**10**
	b)		How is the ethanol produced from sugar factory waste? Write the balanced chemical reaction for the process. Explain ethanol production process with a neat flow chart.	*CO1*	*PO2*	**10**
			OR			
4	a)		Explain the pyrolysis process with neat flow chart. Tabulate the byproducts obtained from the process and their applications.	*CO1*	*PO1*	**10**

		b)	The use and production of biomass for energy are intimately connected with wider policies and practices for agriculture and forestry. In this view, discuss the social and economic aspects of bioenergy generation.	*CO1*	*PO1*	**10**
			UNIT –IV			
	5	a)	List the instances of application of wind energy in olden centuries.	*CO1*	*PO1*	**04**
		b)	Describe with neat sketch the working of wind energy conversion system with main components.	*CO1*	*PO1*	**10**
		c)	Differentiate between horizontal axis machines and vertical axis machines. List the advantages and disadvantages.	*CO1*	*PO1*	**06**
			UNIT – V			
	6	a)	A new installation of solar energy collectors is proposed for partial power supply for an industry. Propose suitable instrument to measure the beam radiation in the industrial area. Explain the working of the instrument with line diagram.	*CO1*	*PO1*	**10**
		b)	What is the principle of solar photovoltaic (PV) power generation? Describe the main components of PV system.	*CO1*	*PO1*	**10**
			OR			
	7	a)	Classify the methods used to store the solar energy. Describe the thermal energy storage system.	*CO1*	*PO1*	**10**
		b)	What is geothermal energy? Classify the geothermal resources. Describe the working of vapor dominated power plant with neat diagram.	*CO1*	*PO1*	**10**

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