Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3160916 Date:22-05-2024

Subject Name:Energy Conservation

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	What is energy audit? Explain elements of energy audit.	**03**
	(b)	Define the following: i) Payback period ii) ROI iii) NPV iv) IRR	**04**
	(c)	Explain guidelines for writing energy audit report.	**07**
Q.2	**(a)**	Explain role of Bureau of Energy Efficiency (BEE).	**03**
	(b)	Explain general principle of energy management.	**04**
	(c)	State advantages of parallel operation of transformer.	**07**
		OR	
	(c)	Explain power factor improvement using: i) Static Capacitors ii)Synchronous Condenser	**07**
Q.3	**(a)**	Explain impact of harmonics and explain any one method to reduce it.	**03**
	(b)	Explain advantages of soft starter over conventional starters.	**04**
	(c)	State and explain characteristics of energy efficient motors.	**07**
		OR	
Q.3	**(a)**	List advantages of electronic ballast.	**03**
	(b)	Explain steps for energy saving in any residential application.	**04**
	(c)	Write a technical note on: Variable Speed Drive (VSD)	**07**
Q.4	**(a)**	Compare fire tube boiler and water tube boiler.	**03**
	(b)	Explain feedwater treatment and its impact on boiler losses.	**04**
	(c)	Explain intermittent blowdown and continuous blowdown in a boiler.	**07**
		OR	
Q.4	**(a)**	Explain PFBC boiler.	**03**
	(b)	Draw and explain schematic diagram for flow of water, steam and flue gases in a boiler plant.	**04**
	(c)	Explain energy efficiency measures in furnace system.	**07**
Q.5	**(a)**	What are advantages and disadvantages of compressed air system?	**03**
	(b)	Enlist the parameters to evaluate the performance of cooling tower.	**04**
	(c)	Explain various methods for energy conservation in compressors.	**07**
		OR	
Q.5	**(a)**	Explain various applications of blowers.	**03**
	(b)	Explain fan efficiency with necessary mathematical equations.	**04**
	(c)	Explain Head-Discharge characteristics for pumps operated in series and parallel.	**07**

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