Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3160916 Date:21-11-2025

Subject Name:Energy Conservation

Time:02:30 PM TO 05:00 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)**	Write down guidelines for writing energy audit report.	**03**
	(b)	Explain objective and general principles of Energy management.	**04**
	(c)	Discuss various instruments used for energy audit.	**07**
Q.2	**(a)**	How energy conservation done by demand side management?	**03**
	(b)	Discuss energy saving in lighting system.	**04**
	(c)	State disadvantages of low power factor. Discuss any one method of Power factor improvements.	**07**
		OR	
	(c)	Explain the effects of harmonics and improvement methods.	**07**
Q.3	**(a)**	Discuss components of Cooling Tower.	**03**
	(b)	Compare reciprocating and rotary air compressor.	**04**
	(c)	Explain energy conservation opportunities in pump and pumping system.	**07**
		OR	
Q.3	**(a)**	List out the types, applications and advantages of blower.	**03**
	(b)	Enumerate the energy saving opportunities in cooling towers.	**04**
	(c)	Describe “Energy Saving in Compressors & Compressed Air Systems”.	**07**
Q.4	**(a)**	List factors affecting furnace performance.	**03**
	(b)	Write difference between FBC and PFBC boilers.	**04**
	(c)	Discuss the sources of waste heat and its potential applications.	**07**
		OR	
Q.4	**(a)**	Write advantages and properties of thermal insulating material.	**03**
	(b)	Write down properties of steam utilization.	**04**
	(c)	Describe Water treatment and its impact on boiler losses.	**07**
Q.5	**(a)**	How losses are reduced in Transformer?	**03**
	(b)	What are the Advances in boiler technologies.	**04**
	(c)	Classify the energy audit & explain the three phases of detailed energy audit.	**07**
		OR	
Q.5	**(a)**	State advantages and application of soft starters.	**03**
	(b)	Describe technical aspects of energy efficient motors for energy saving.	**04**
	(c)	Classify heat recovery systems and explain any one in detail.	**07**

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3160916 Date:02-12-2024

Subject Name: Energy Conservation

Time:02:30 PM TO 05:00 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 are the main causes for T & D losses?	**03**
	(b)	What is importance of energy audit?	**04**
	(c)	Explain general principles of energy management & skills required for energy management.	**07**
Q.2	**(a)**	Explain the meaning of energy management skills.	**03**
	(b)	List out the instruments for audit & monitoring energy & energy savings.	**04**
	(c)	Write short note on demand side management.	**07**
		OR	
	(c)	Discuss the guidelines for writing the energy audit report.	**07**
Q.3	**(a)**	Explain need of starters both for a.c & d.c motors.	**03**
	(b)	What do you mean by load management?	**04**
	(c)	Define harmonics & Explain harmonic reduction techniques.	**07**
		OR	
Q.3	**(a)**	Write importance of parallel operation of transformers.	**03**
	(b)	Explain the effect of low power system on electrical systems.	**04**
	(c)	Write short note on automatic power factor controllers.	**07**
Q.4	**(a)**	Explain cooling towers.	**03**
	(b)	What are the advances in boiler technology?	**04**
	(c)	Describe the methods to improve the performance of compressed air system.	**07**
		OR	
Q.4	**(a)**	List out essential qualities of a good boiler.	**03**
	(b)	Write advantages & disadvantages of L.E.D.	**04**
	(c)	Discuss heat recovery boilers & write it's limitations & constrains.	**07**
Q.5	**(a)**	What is FBC boiler?	**03**
	(b)	Define energy savings in pumps & pumping systems.	**04**
	(c)	Discuss steam utilization properties, distribution, losses & stream trapping.	**07**
		OR	
Q.5	**(a)**	Explain the performance of pump in series & parallel operation.	**03**
	(b)	Define furnaces refractory-types & sections.	**04**
	(c)	Write short note on energy saving in blowers.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3160916 Date:11-12-2023

Subject Name:Energy Conservation

Time:02:30 PM TO 05:00 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.**

Q.1	**(a)**	Explain objective and general principles of Energy management.	**03**
	(b)	Classify energy audit & explain the three phases of detailed energy audit.	**04**
	(c)	Write function and working of various energy audit instruments.	**07**
Q.2	**(a)**	How losses are reduced in Transformer ?	**03**
	(b)	Explain the effects of harmonics and improvement method.	**04**
	(c)	Describe technical aspects of energy efficient motors and energy saving by it.	**07**
		OR	
	(c)	Enlist disadvantages of low power factor. Discuss Methods of Power factor improvements.	**07**
Q.3	**(a)**	Write down its advantages and properties of thermal insulating material.	**03**
	(b)	What is FBC Boilers? Write difference between FBC and PFBC boilers.	**04**
	(c)	List factors affecting furnace performance. Describe factors affecting fuel economy in furnaces.	**07**
		OR	
Q.3	**(a)**	What are the Advances in boiler technologies.	**03**
	(b)	Describe Water treatment and its impact on boiler losses.	**04**
	(c)	Discuss the sources of waste heat and its potential applications.	**07**
Q.4	**(a)**	Compare reciprocating and rotary air compressor	**03**
	(b)	Enumerate the energy saving opportunities in cooling towers.	**04**
	(c)	Explain energy conservation opportunities in pump and pumping system.	**07**
		OR	
Q.4	**(a)**	Write about performance of pumps in parallel and series operation.	**03**
	(b)	Discuss the energy conservation in blower.	**04**
	(c)	Describe the methods to improve performance of compressed air system.	**07**
Q.5	**(a)**	Classify heat recovery systems and explain any one in detail.	**03**
	(b)	Discuss the energy conservation by demand side management (DSM).	**04**
	(c)	Describe energy saving using LED, soft starter and variable speed drive.	**07**
		OR	
Q.5	**(a)**	State the advantages and limitations of NPV and Payback period.	**03**
	(b)	List out the types, applications and advantages of blowers.	**04**
	(c)	Discuss Steam Utilization Properties, distribution and losses & steam trapping.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3160916 Date:16-12-2022

Subject Name:Energy Conservation

Time:02:30 PM TO 05:00 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.**

Q.1	**(a)**	Explain need of energy audit and management.	**03**
	(b)	Define energy management. Write down its objective.	**04**
	(c)	Explain energy management strategy.	**07**
Q.2	**(a)**	Give the hot and cold applications of insulator.	**03**
	(b)	Write down Guidelines for writing energy audit report.	**04**
	(c)	Write a short note on automatic power factor controllers.	**07**
		OR	
	(c)	Explain energy saving in pumps & pumping systems.	**07**
Q.3	**(a)**	What is energy efficient motor? How is it important?	**03**
	(b)	Explain variable speed drivers.	**04**
	(c)	Write a short note on soft starter.	**07**
		OR	
Q.3	**(a)**	Demand side management (DSM)	**03**
	(b)	Explain harmonics & its improvements	**04**
	(c)	Explain method of power factor improvement.	**07**
Q.4	**(a)**	Give the limitations of heat recovery.	**03**
	(b)	Write different between FBC and PFBC boilers.	**04**
	(c)	Give the types and classification of furnace. Explain any one in detail.	**07**
		OR	
Q.4	**(a)**	Write down properties of steam utilization.	**03**
	(b)	What is the thermic fluid heater? Explain its need and application.	**04**
	(c)	Explain Flash steam recovery.	**07**
Q.5	**(a)**	Give the type of pumps and its application.	**03**
	(b)	Give the different series & parallel operation of blower	**04**
	(c)	Write a short note on cooling tower.	**07**
		OR	
Q.5	**(a)**	Give the types & application of blower.	**03**
	(b)	Explain the performance of parallel and series operating pump.	**04**
	(c)	Write a short note on compressors.	**07**

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