

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3160207****Date:05-12-2023****Subject Name: Alternative Fuels and Power Systems****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) Classify different alternative fuels.	03
	(b) Discuss different reasons for requirements of alternative fuels in current scenario in India.	04
	(c) Explain biodiesel production process with diagram.	07
Q.2	(a) Discuss advantages and disadvantages of methanol.	03
	(b) Enlist advantages and disadvantages of biodiesel.	04
	(c) Write a short note on different types of biogas plants.	07
	OR	
	(c) Explain working of Wankel engine with neat sketch.	07
Q.3	(a) Explain different biogas production process stages.	03
	(b) Explain storage and dispensing systems of CNG.	04
	(c) Write a short note on electric vehicles.	07
	OR	
Q.3	(a) Explain methanol production process with suitable reactions.	03
	(b) Discuss different factors affecting transesterification process.	04
	(c) Enlist different hydrogen production methods. Explain any two methods.	07
Q.4	(a) Discuss advantages and disadvantages of electric vehicles.	03
	(b) Explain major components of Biogas Plants in detail.	04
	(c) Explain parts of CNG gas conversion kit used in a vehicle.	07
	OR	
Q.4	(a) Write a short note on eco friendly plastic fuel.	03
	(b) Discuss advantages and disadvantages of hydrogen fuel.	04
	(c) Explain Stirling engine with suitable diagrams.	07
Q.5	(a) Discuss different barriers for implementing use of alternative fuels in India.	03
	(b) Discuss advantages & disadvantages of using LPG as an alternative fuel.	04
	(c) Explain working of a solar powered vehicle with schematic layout.	07
	OR	
Q.5	(a) Compare fuel cell with battery.	03
	(b) Write a short note on fuel cell.	04
	(c) Explain series & parallel type hybrid electric vehicles with neat schematic diagrams.	07
