

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024****Subject Code:3160207****Date:17-05-2024****Subject Name:Alternative Fuels and Power Systems****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) Define. (i) Calorific value (ii) Fire Point (iii) Esterification	03
	(b) Enlist advantages and disadvantages of biodiesel.	04
	(c) With neat sketch discuss construction and working of electric vehicle.	07
Q.2	(a) Discuss about ‘Appropriate selection of biodiesel feedstock’.	03
	(b) Discuss advantages & disadvantages of CNG as an alternative fuel	04
	(c) Write a short note on biodiesel production process.	07
	OR	
	(c) Discuss construction and working of solar vehicle with block diagram.	07
Q.3	(a) Discuss comparison between Electric and Hybrid vehicle in brief.	03
	(b) What is a fuel cell? Explain its power rating and performance.	04
	(c) Explain different components of CNG fuel gas conversion kit.	07
	OR	
Q.3	(a) What are the factors affecting transesterification process? Explain	03
	(b) Which modification is required to convert petrol engine in to CNG engine?	04
	(c) With suitable sketches explain Wankel rotary engine.	07
Q.4	(a) Explain the layout of solar powered vehicle in brief.	03
	(b) Explain the physical properties of hydrogen fuel.	04
	(c) Discuss the method of biomass gasification and enlist the merits & demerits.	07
	OR	
Q.4	(a) Compare fuel cell with battery.	03
	(b) Distinguish between viscosity and volatility.	04
	(c) Explain the various configuration of Hybrid vehicle in detail with neat diagram	07
Q.5	(a) Explain different electric motors used for automotive applications	03
	(b) Discuss advantages and disadvantages of hydrogen fuel.	04
	(c) Write a short note LPG as a fuel in vehicle.	07
	OR	
Q.5	(a) Define effect of vegetable oil on engine emission characteristics.	03
	(b) Write a short note on “need of alternative fuels in India	04
	(c) Explain free piston engine with necessary diagrams	07