

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3160207****Date:14-12-2022****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) Explain the properties flash point and viscosity.	03
	(b) State positive and negative consequences of electric vehicles.	04
	(c) Draw layout of solar powered vehicle and explain it.	07
Q.2	(a) What are ecofriendly plastic fuels?	03
	(b) Explain methanol production process with suitable reactions.	04
	(c) What is the drawback of using pure alcohol as fuel in vehicle.	07
	OR	
	(c) Write a short note on biodiesel production process.	07
Q.3	(a) Explain safety criteria for LPG and CNG	03
	(b) Enlist factors affecting biogas formation.	04
	(c) Describe properties & production process of CNG as an engine fuel.	07
	OR	
Q.3	(a) Explain different components of CNG gas conversion kit in brief.	03
	(b) Describe dual fuel engine.	04
	(c) Explain major components of Biogas Plants in detail.	07
Q.4	(a) Explain different electric motors used for automotive applications.	03
	(b) Explain working of hybrid vehicles.	04
	(c) Explain production process and storage of hydrogen.	07
	OR	
Q.4	(a) What is a fuel cell? Explain its power rating and performance.	03
	(b) Write short note on Esterification.	04
	(c) What is emulsification of alcohol with diesel? Describe emission improvement by blending of alcohol with diesel.	07
Q.5	(a) Explain working of Wankel engine with neat sketch.	03
	(b) Describe stratified charge engine.	04
	(c) Compare series type and parallel type hybrid electric vehicle with suitable diagrams.	07
	OR	
Q.5	(a) Is it possible to use Di- Methyl Ether (DME) as alternative fuel in I.C. engine? Explain in detail.	03
	(b) Define effect of vegetable oil on engine emission characteristics.	04
	(c) Short note on free piston engine with necessary diagrams.	07
