

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3160207

Date:25-11-2024

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.

- Q.1** (a) Give the classifications of alternative fuels. **03**
(b) Justify the need of alternative fuels in India. **04**
(c) Explain bio diesel production process with suitable diagram. **07**
- Q.2** (a) List the advantages & disadvantages of CNG as an alternative fuel. **03**
(b) State positive and negative consequences of electric vehicles. **04**
(c) Explain storage, emission, cost and safety criteria for LPG and CNG. **07**
- OR**
- (c) Discuss construction and working of electric vehicle with neat sketch. **07**
- Q.3** (a) Explain different components of CNG gas conversion kit in brief. **03**
(b) What is the drawback of using pure alcohol as fuel in vehicle. **04**
(c) Write a short note on free piston engine. **07**
- OR**
- Q.3** (a) Describe dual fuel engine. **03**
(b) Explain the production process of ethanol with reaction process. **04**
(c) Write a short note on solar powered vehicle. **07**
- Q.4** (a) Explain different electric motors used for automotive applications. **03**
(b) Describe stratified charge engine. **04**
(c) Explain construction and working of Wankel engine with neat sketch. **07**
- OR**
- Q.4** (a) Distinguish between viscosity and volatility. **03**
(b) Discuss the scope of availability of fossil fuel in future. **04**
(c) Write a short note on Esterification. **07**
- Q.5** (a) Compare fuel cell with battery. **03**
(b) Define effect of vegetable oil on engine emission characteristics. **04**
(c) Compare series type and parallel type hybrid electric vehicle with suitable diagrams. **07**
- OR**
- Q.5** (a) Define Fuel cell. List down the types of fuel cell. **03**
(b) Describe working of Stirling engine. **04**
(c) List down types of biogas plants. Explain anyone with diagram. **07**
