

Code No: **R1632244**

**R16**

**SET - 1**

**III B. Tech II Semester Regular/Supplementary Examinations, August-2021**  
**ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES**

(Automobile Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answer **ALL** the question in **Part-A**  
3. Answer any **FOUR** Questions from **Part-B**

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**PART -A**

**(14 Marks)**

- 1 a) Write the performance characteristics of any one alternative fuel. [2M]
- b) What are the merits, demerits and applications of bio-gas? [3M]
- c) What is hydrogen energy? Why is it important to study for you? [2M]
- d) What are various precautions to take in design of electrical vehicles? [3M]
- e) Write short notes on acceptability of electrical vehicles. [2M]
- f) What are various types of gas turbines used in the electrical vehicles? [2M]

**PART -B**

**(56 Marks)**

- 2 a) Write the need for non-conventional sources of energy. [3M]
- b) What are the alternative sources of energy? Write the merits and demerits of any three sources. [8M]
- c) Write short notes on general photo-voltaic system with diagram. [3M]
- 3 a) Describe any one type of bio gas plant. [3M]
- b) How bio-gas is made through different sources and is utilized in automobiles. [7M]
- c) Write short notes on photosynthetic oxygen production and energy plantation. [4M]
- 4 a) What is hydrogen energy? Write their properties, sources, merits, demerits and applications. [7M]
- b) Write short notes on Electrolysis of water, Thermal decomposition of water, and Thermodynamics of water splitting. [7M]
- 5 a) How to improve the battery life of an electrical car? Explain. [7M]
- b) What are the Storage and Transportation methods used for hydrogen fuel and write their precautions and safety measures. [7M]
- 6 a) What are the driving requirements of electric car? Write the comparative use of fuel and energy. [7M]
- b) Write the impacts of using fuel and energy on urban air quality, price and material requirements. [7M]
- 7 a) Write notes on use of gas turbine in automobiles. [7M]
- b) Write the design consideration of turbocharger and their usefulness on their performance. [7M]

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