

Time: 3 hours

Marks: 80

N. B. :

1. Question number 1 is compulsory
2. Attempt any **THREE** from question 2 to 6
3. Use illustrative diagrams wherever required

Q1) Attempt any **FOUR**.

- a) How the fuel properties affect I.C. Engine performance parameters? **05**
- b) What is alternative fuel means? List different types of alternative fuel. **05**
- c) Explain the significance of ignition quality in fuel combustion. **05**
- d) Discuss the utility Neem oil as bio diesel in combustion? **05**
- e) Enlist two advantages & limitations of electric vehicles. Write few names of companies, manufacturing electric two wheelers. **05**

Q2) a) Explain the scope of availability of fossil fuels. Brief on fossil fuel scenario in India. **10**
 b) List the sources of methanol and ethanol. Write the properties of alcohol as alternative fuel. **10**

Q3) a) Differentiate between diesel & biodiesel. Why biodiesel is not sold in commercial market? How to overcome the associated drawbacks? **10**
 b) Write the properties of hydrogen with respect to its utilization as a renewable form of energy mentioning the sources of hydrogen worldwide. **10**

Q4) a) What kind of projects may be assigned to the engineering students to promote the use and research in the field of alternative fuels? Explain the plan of such activity. **10**
 b) Write short notes on the storage, application & economics of hydrogen as alternative fuel in four-wheeler automobiles. **10**

Q5) a) Draw and explain the layout of a fuel cell vehicle. **10**
 b) Compare Jatropa oil, Karanji oil, Neem oil, Rice bran oil and Linseed oil with respect to the efficiency, impact on pollution as alternative fuel for combustion. **10**

Q6) a) Draw the layout of electric vehicle. Discuss the electronic controlled systems in electric vehicle. **10**
 b) Explain the government initiatives undertaken to promote the use of alternative fuels in the four-wheeler and two-wheeler automobiles. Discuss the impact of such initiatives on the environment. **10**
