

**MCT**  
MANJARA CHARITABLE TRUST  
**RAJIV GANDHI INSTITUTE OF TECHNOLOGY**

Date: 17.4.15

MID TERM TEST NO.2

Max. Marks : 15

SUBJECT: APPLIED CHEMISTRY II

Time : 45 Min

**Q1 Answer any FIVE questions from the following : 05**

- a. Define Cracking.
- b. Name any two antiknocking agents other than TEL.
- c. What is power alcohol ?
- d. Select the compound which possesses highest octane number and cetane number out of the following:  
n- heptane, n-hexadecane, n-octane and iso- octane.
- e. What is sweetening of petrol?
- f. Define Cetane number.
- g. Define chemical fuel.

**Q2. What is biodiesel? Explain the method to obtain it from vegetable oil. What are the advantages of biodiesel? 05**

**OR**

Explain the Moving bed catalytic cracking with the help of labeled diagram. 05

**Q3. The composition of gas was found to be  $H_2 = 10\%$ ,  $CH_4 = 20\%$ ,  $C_2H_6 = 16\%$ ,  $N_2 = 6\%$ ,  $CO = 18\%$ ,  $CO_2 = 22\%$  and rest being oxygen. Calculate volume and weight of air required for  $1m^3$  of this gas. 05**

**OR**

A coal sample was analysed as follows :

- i. 1.5 g of coal was Kjeldahlised and  $NH_3$  gas thus evolved was absorbed in 50 ml of 0.1N  $H_2SO_4$  solution. After absorption the excess/residual acid required 38.2 ml of 0.1N NaOH solution for exact neutralization.
- ii. 1.5 g of same coal sample was completely combusted in a combustion tube and at the end of experiment the increase in weight of tube containing anhydrous  $CaCl_2$  and KOH bulb was found to be 1.35 g and 4.55 g respectively.
- iii. 2.60 g of the same coal sample in quantitative analysis produced 0.1755 g of  $BaSO_4$  ppt.
- iv. If the given coal sample contains 4% ash.  
Find the result of Ultimate analysis in %.

05