

**B.TECH. SEM -VI (CHEMICAL 2014 COURSE (CBCS) :
WINTER - 2017**

SUBJECT: ELECTIVE – II: BIOFUEL TECHNOLOGY

Day: **Friday**
Date: **24/11/2017**

W-2017-2178

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

Q.1 What are biofuels? Enumerate advantages of biofuels over conventional fuels. **(10)**

OR

Q.1 What are the chemical and bio-based routes of synthesis of butanol? Enumerate the advantages of bio-butanol. **(10)**

Q.2 What are the pre-treatment methods for synthesis of biofuels using biomass? Detail any one. **(10)**

OR

Q.2 Differentiate between first and second generation of biofuels. Enumerate limitations of first generation. **(10)**

Q.3 What are the catalysts used in biodiesel production? Enumerate mechanism of transesterification reaction when acid catalyst is used to synthesize biodiesel. **(10)**

OR

Q.3 Write short note on: **(10)**
i) Waste cooking oil for biodiesel production.
ii) Optimization of biodiesel yield.

Q.4 Enumerate bio-ethanol synthesis using sugar molasses as a feedstock. **(10)**

OR

Q.4 What are the process variables in fermentation of biofuels? Enumerate role of temperature on fermentation yield. **(10)**

Q.5 What is the role of temperature and feedstock particle size in biogas generation? **(10)**

OR

Q.5 Enumerate the effect of system and operating parameters on bio-hydrogen production. **(10)**

Q.6 Define and enumerate MFC with neat diagram. **(10)**

OR

Q.6 Differentiate between single and two chamber designs for MFC. **(10)**