

SEAT No. _____

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[A-31]

Sardar Patel University

M. Sc. (Integrated) Biotechnology – Tenth Semester Examination

Bio-Renewable Energy Resources (PS10CIGEB2)

Wednesday, 11th April 2018

10:00 am to 1:00 pm

Total Marks: 70

Q.I Multiple choice questions: (08)

- 1 Biodiesel chemically consists mostly of _____.
(a) Fatty acid methyl ester (c) Fatty acid amine esters
(b) Fatty acid alkaline esters (d) None of these
- 2 A mixture of CO₂, H₂ and other hydrocarbons is called _____.
(a) Methane gas (c) Gasohol
(b) Combustion (d) Syngas
- 3 Thermochemical decomposition of organic material at elevated temperature in the absence of oxygen is called _____.
(a) Gasification (c) Pyrolysis
(b) Degradation (d) Glycolysis
- 4 In ABR biogas fermenter ABR stands for _____.
(a) Anaerobic Baffled Reactor (c) Anaerobic Biological Reactor
(b) Aerobic Baffled Reactor (d) Aerobic Biological Reactor
- 5 Which of the following fuel cell operates at high temperature at 600-1000 °C?
(a) Molten carbonate Fuel cell (c) Regenerative fuel cell
(b) Solid oxide Fuel cell (d) Alkaline Fuel cell.
- 6 Solid oxide fuel cell use _____ compounds as the electrolyte layer to conduct O₂ ions.
(a) Cobalt (c) Silver
(b) Zironia (d) All of these
- 7 Triacyl glycerols are accumulated in many algae species as _____ products.
(a) Storage (c) lipids
(b) Fats (d) sugars
- 8 _____ deficiency is the predominant way to induce lipid body formation in microalgae.
(a) Sulfur (c) Nitrogen
(b) Hydrogen (d) Carbon dioxide

(P.T.O.)

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Q.II Answer the following (Any seven) (14)

1. What is green diesel?
2. Write about Bioethers.
3. Define Biomethenation.
4. Which are the three types of organic matter which has potential for methane production?
5. Give the drawbacks of Biogas system.
6. What do you mean by Regenerative Fuel cell?
7. Write the advantages of Biofuel cell.
8. Give the brief note on fuel from sea weeds.
9. Which are the Biofuel products derived from seaweeds?

Q.III (a) Give the classification of Biofuel. (06)
(b) Discuss in detail about Oil Shale. (06)

OR

(b) What do you understand by "Electricity from Biomass"? Explain. (06)

Q.IV (a) Discuss about different raw materials use for Biogas production and write their characteristics. (06)
(b) Give a note on effect of temperature on Methane Production. (06)

OR

(b) Write about types of Bioreactors use for Biogas production. (06)

Q.V (a) Give a detailed note on basic concept of fuel cell with reference to solid oxide cell and proton exchange membrane cells. (06)
(b) Discuss in detail about Biohydrogen production pathway with reference to photo system. (06)

OR

(b) Differentiate between microbial fuel cell and Alkali fuel cell. (06)

Q.VI (a) Give a detail account on Photo Bioreactor for microalgae cultivation. (06)
(b) Write a note on algal lipid and their metabolism. (06)

OR

(b) Discuss about Metabolic engineering and molecular biology of algae for fuel production. (06)
