

M. Sc. DEGREE EXAMINATIONS – MARCH 2016
IV SEMESTER

45134

Material Science & Nano Technology
PAPER IV – Energy Conversion Technologies

Time : 3 Hours

Max. Marks: 75

(No additional sheet will be supplied)

PART –A (5x3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page

1. Explain the biogas production by thermo chemical process.
2. Discuss the production of ethanol from cellulose.
3. Give in brief about battery components.
4. How the batteries are categorized as primary and secondary?.
5. Write the working of fuel cell.
6. Give brief account of molten carbonate fuel cell.
7. Write the importance of solar cell.
8. Write the working of polymer solar cell.

PART –B (4x15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages

9. With neat diagram explain the biodiesel production from plants and algae..
(OR)
10. Write the challenges and opportunities of biorefinery. Explain ethanol production from microbiological process.
11. Write the principle and operation of a battery. Write the working of Lead acid battery.
(OR)
12. With neat diagram discuss the working of Nickel-Cadmium battery.
13. Sketch the working of solid oxide and direct methanol fuel cell.
(OR)
14. Write the construction of proton exchange membrane fuel cell and its characteristics and efficiency
15. Discuss the manufacture of polycrystalline and nano crystalline silicon solar cells.
(OR)
16. Write the function of dye sensitized solar cells and discuss about organic solar cell.

