

**DIPLOMA IN ELECTRICAL ENGINEERING
(DELVI) / ADVANCED LEVEL CERTIFICATE
COURSE IN ELECTRICAL ENGINEERING
(ACELVI)**

Term-End Examination

June, 2017

00974

BIEE-029 : POWER GENERATION SYSTEMS

Time : 2 hours

Maximum Marks : 70

*Note : Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. Select the suitable answers for the following : $7 \times 2 = 14$
- (a) Horizontal axis and vertical axis are the types of
- (i) Solar cells
 - (ii) Windmills
 - (iii) Nuclear reactors
 - (iv) None of the above

- (b) Tidal Energy utilizes
- (i) Kinetic Energy of Water
 - (ii) Potential Energy of Water
 - (iii) Mechanical Energy
 - (iv) Both (ii) and (iii)
- (c) A fuel cell, in order to produce electricity, burns
- (i) Helium
 - (ii) Nitrogen
 - (iii) Hydrogen
 - (iv) Both (i) and (ii)
- (d) Which of the following is a non-renewable source of energy ?
- (i) Coal
 - (ii) Wind
 - (iii) Solar
 - (iv) Geothermal
- (e) Both power and manure are provided by
- (i) Thermal Plants
 - (ii) Biogas Plants
 - (iii) Hydroelectric
 - (iv) Tidal Energy

- (f) The calorific value of biogas is
- (i) 30 – 35 kJ/g
 - (ii) 36 – 40 kJ/g
 - (iii) 41 – 45 kJ/g
 - (iv) 46 – 50 kJ/g
- (g) Which part of the solar cooker is responsible for green house effect ?
- (i) Coating with black colour inside the box
 - (ii) Mirror
 - (iii) Glass sheet
 - (iv) Outer cover of the solar cover
2. (a) What factors are taken into account while selecting the site for a hydroelectric power plant ? 7
- (b) What is the importance of non-conventional energy sources over conventional sources in the current scenario ? 7
3. (a) Explain the basic principle of operation of the Magneto Hydro Dynamic (MHD) generation system. 7
- (b) A solar PV cell is irradiated by Solar Insolation of 900 W/m^2 . The maximum power output per unit area of the cell is 100 W/m^2 .
Determine the following : 7
- (i) The maximum conversion efficiency.
 - (ii) The cell area for an output of 950 watt at the condition of maximum power.

4. (a) Explain the construction and working of wind energy conversion system. 7
- (b) Mention the limitations of Solar Photovoltaic (SPV) system. Write its applications also. 7
5. (a) List out the difference between a fuel cell and a battery. 7
- (b) Explain the construction and working of Floating Drum Biogas Plant. 7
6. (a) Explain the difference between a Geothermal power plant and a Thermal power plant. 7
- (b) Explain the working of a solar pump with a neat diagram. 7
7. Write short notes on any **two** of the following : $2 \times 7 = 14$
- (a) Magneto Hydro Dynamic Power Generation
- (b) Thermo Electric Power Plant
- (c) Comparison of various Generating Stations
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