No. of Printed Pages : 4

**BIEE-029**

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

00753

## Term-End Examination

## December, 2016

## BIEE-029 : POWER GENERATION SYSTEMS

*Time : 2 hours* *Maximum Marks : 70*

***Note :*** *Question no. 1 is **compulsory**. Attempt any **four** questions from questions no. 2 to 7. All questions carry equal marks.*

1. Choose the correct answer. *7×2=14*

   (a) Thermal efficiency of a geothermal power plant is of the order of

   (i) 30%

   (ii) 50%

   (iii) 60%

   (b) Superheating of steam is desirable for

   (i) increasing the efficiency of Rankine cycle

   (ii) reducing the initial condensation losses

   (iii) Both of the above

(c) The power output from a hydroelectric power plant depends on the three parameters

(i) head, type of dam and discharge

(ii) head, discharge and efficiency of system

(iii) type of dam, discharge and catchment area

(d) The function of a solar collector is to convert

(i) solar energy into electricity

(ii) solar energy into radiation

(iii) solar energy into thermal energy

(e) The power output per unit volume of an MHD generator is proportional to

(i) electrical conductivity of the gas

(ii) square of the fluid velocity

(iii) Both (i) and (ii)

(f) The main byproduct of the biogas plant is

(i) biogas

(ii) biomass

(iii) organic manure

(g) A geothermal power plant may yield

(i) cold water

(ii) wet steam

(iii) superheated gas

2. (a) What are the essential requirements for solar power generation ? 7

(b) Explain the I – V characteristic of a photovoltaic cell. 7

3. (a) Describe the working principle of a wind turbine with a neat diagram. 7

(b) What is the importance of Variable Frequency Drive (VFD) in wind energy to electrical energy conversion ? 7

4. (a) Explain the construction and working of a solar furnace. 7

(b) Enumerate the advantages and disadvantages of hydroelectric power plants. 7

5. (a) What are the future prospects of non-conventional sources of energy ? Explain. 7

(b) Describe the working principle of a battery in detail. Enlist its applications. 7

6. (a) Describe how power is generated by MHD. 7

(b) Explain the methods for obtaining energy from biomass. 7

7. (a) Draw a labelled sketch of a geothermal power plant and write its working. 7

(b) Describe the following for a fuel cell : 7

(i) Conversion efficiency

(ii) Work output and e.m.f.