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BIEE-037

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

00334 **Term-End Examination**

June, 2014

BIEE-037 : POWER PLANT ECONOMICS AND CONTROL

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Question no. **1** is **compulsory**.*

1. Choose the correct alternative out of the given ones : *7×2=14*

(a) For high head and low discharge the water turbine used is

(i) Pelton wheel

(ii) Kaplan turbine

(iii) Francis turbine

(iv) Propeller turbine

(b) In a steam power plant, heat from the flue gases is recovered in

(i) a condenser

(ii) a chimney

(iii) economiser and air preheater

(iv) a desuperheater

(c) Which of the following plants is suitable for peak loads ?

(i) Diesel engine plant

(ii) Steam power plant

(iii) Nuclear power plant

(iv) Hydroelectric plant

(d) A synchronous condenser is usually a

(i) d.c. generator

(ii) induction motor

(iii) over-excited synchronous motor

(iv) unexcited synchronous motor

(e) The area under the load curve represents

(i) System voltage

(ii) Energy consumed

(iii) Maximum demand

(iv) Average demand

(f) Demand factor on a power system is

(i) always greater than unity

(ii) normally greater than unity

(iii) always lesser than unity

(iv) normally lesser than unity

(g) Power factor can be improved by using

(i) Static capacitors

(ii) Phase advancers

(iii) Synchronous condensers

(iv) All the above

2. Give the classification of steam turbines used in power plants. What are the different methods of compounding of steam turbines ? *14*

3. What is the special feature of two part tariff ? For which category of consumers is it used ? Discuss the importance of encouraging consumers to use electricity during off peak hours. *14*

4. What are the causes of low power factor in a power system ? Discuss briefly the methods adopted for the improvement of power factor. What is the location of installing devices for power factor improvement ? *14*

5. Define and explain the significance of the following terms with illustration : $4 \times 3\frac{1}{2} = 14$

   (a) Load estimation

   (b) Demand factor

   (c) Load factor

   (d) Diversity factor

6. What is pumped storage plant ? Explain the advantages of a pumped storage plant for short peak load operation. Compare its economics with an old steam plant. *14*

7. Explain the method for determining the distribution of given load among the two plants for most economic generation. *14*

8. Write notes on any ***two*** of the following : *7×2=14*

(a) Ash handling

(b) Power factor improvement

(c) Interconnected power system
