

DIPLOMA IN ELECTRICAL ENGINEERING

Term-End Examination

June, 2013

BIEE-037 : POWER PLANT ECONOMICS  
AND CENTERING

Time : 2 hours

Maximum Marks : 70

- NOTE : (i) Question - 1 is compulsory.  
(ii) Attempt any four questions from Q.No. 2 to Q.No. 8.

1. Choose the correct alternative out of the given : 7x2=14
- (a) In which part of the thermal power plant, the steam pressure is less than that of atmosphere ?
- (i) Boiler (ii) Turbine  
(iii) Superheater (iv) Condenser
- (b) Location of a surge tank in a hydro electric power station, is near :
- (i) turbine (ii) tail race  
(iii) reservoir (iv) dam
- (c) Control rods used in nuclear reactors are made of :
- (i) zirconium (ii) boron  
(iii) beryllium (iv) lead

- (d) Domestic consumers are usually charged :
  - (i) flat demand tariff
  - (ii) block rate tariff
  - (iii) flat rate tariff
  - (iv) off peak tariff
- (e) Diversity factor has direct effect on :
  - (i) fixed cost per unit generated
  - (ii) operating cost per unit generated
  - (iii) running cost per unit generated
  - (iv) combination of fixed cum operating cost per unit generated
- (f) Load factor is the ratio of :
  - (i) peak load to average load
  - (ii) peak load to minimum load
  - (iii) average load to peak load
  - (iv) average load to minimum load
- (g) The primary reason for low power factor is owing to installation of :
  - (i) synchronous motors
  - (ii) dc motors
  - (iii) induction motors
  - (iv) commutator motors

2. Give general layout of hydro-electric power plant. 14  
Explain the functions of different components in storage reservoir plants. Clearly explain the principle of hydro - electric plant.
3. Define and explain the significance of the following terms with illustrations.  $4 \times 3\frac{1}{2} = 14$   
(a) Demand factor  
(b) Load factor  
(c) Diversity factor  
(d) Plant factor
4. What is meant by tariff ? Explain the following 14 tariffs.  
(a) Flat rate tariff  
(b) Block rate tariff  
(c) Two part tariff  
(d) Power factor tariff
5. Explain installed capacity, installed reserve, cold reserve, operating reserve, and spinning reserve. 14
6. Give the elementary treatment of transmission loss and its effect on optimum scheduling of power plants, which are interconnected. 14
7. List advantages of combined working of hydro and thermal plants and also develop a schedule for their economical operation. 14

8. Write notes on **any two** of the following : **2x7=14**
- (a) Coal analysis
  - (b) Steam pressure control
  - (c) Supervisory control and monitoring system
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