| BICEE-007 |

DCLEVI
DIPLOMA ENGINEERING
Term-End Examination
December, 2013

BICEE-007 : WATER POWER ENGINEERING

Time : 2 hours   *Maximum Marks : 70*

Note : *Answer five questions in all and question no. 1 is compulsory.*

1. Select **one** correct answer from the following :

                                                        7x2=14

    (a) Wheel capacity and available power is best determined by :
        (i)   Flow-duration curve
        (ii) Hydrograph
        (iii) Man curve
        (iv) None

    (b) Storage capacity of a reservoir is determined by :
        (i)   Mass curve method
        (ii) ratio method
        (iii) calendar year method
        (iv) none

    (c) Surge tank is necessarily provided in :
        (i)   long penstocks
        (ii) short penstocks
        (iii) pressure tunnel
        (iv) surface penstocks

    (d) If load factor is high, the unit cost of energy is comparatively :
        (i)   high   (ii) low
        (iii) same   (iv) none

(e)   Power plant used to take peak load has :
    (i)   high load factor
    (ii)   low load factor
    (iii) average load factor
    (iv)   none of the above

(f)   A pumped storage hydroelectric plant is a :
    (i)   high head plant
    (ii)   run-off river plant
    (iii) base load plant
    (iv)   peak load plant

(g)   Dependability of live storage in a power project is :
    (i)   100%   (ii)   90%
    (iii) 75%   (iv)   60%

2.   Discuss water power engineering application of hydrology. Explain the terms precipitation, stream flow and evaporation.   **14**

3.   What are the various load studies carried out for waterpower development ? Discuss firm power and secondary power.   **14**

4.   Discuss various types of hydropower plants. Why run-off-river plants are preferred these days over storage base plants ?   **14**

5   State the design criteria of a concrete gravity dam. How you will determine the various factors of safety against possible failures ? Explain briefly.   **14**

6.   What are the general requirements of a good intake in a hydropower scheme ? Discuss the hydraulic design consideration of an efficient intake.   **14**

7.   Discuss the relative advantages of the following types of power intakes gates :   **2x7=14**
(a)   Sliding gate
(b)   Roller gates