DCLEVI

Term-End Examination

June, 2012

BICEE-007 : WATER POWER ENGINEERING

01645

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) Major hydropower generation in India is
         from :

         (i)   runoff river plants

         (ii) storage plants

         (iii) pumped storage plants

         (iv) tidal plants

    (b) Earthen dams are :

         (i)   rigid dams

         (ii) non rigid dams

         (iii) overflow dams

         (iv) diversion dams.

(c) In a concrete gravity dam, with a sloping upstream face, the resisting force is provided by the :

(i) weight of the dam

(ii) weight of the water supported on the upstream slope

(iii) both (i) and (ii)

(iv) none of these.

(d) The 'safety valve' of a dam is its :

(i) drainage gallery

(ii) inspection gallery

(iii) spillway

(iv) outlet sluices.

(e) The Reynolds number is defined as the ratio of :

(i) Gravity force to Viscous force.

(ii) Viscous force to Inertia force.

(iii) Inertia force to Viscous force.

(iv) Gravity force to Inertia force.

(f) A storage hydro plant essentially involves :

(i) a barrage or a weir

(ii) dam

(iii) either (i) or (ii)

(iv) neither (i) or (ii).

(g) A Pelton's turbine is a :

(i) velocity turbine

(ii) reaction turbine

(iii) pressure turbine

(iv) none of these.

2. (a) Define Hydrology. What is "hydrologic cycle" and what is its importance ? **7**

   (b) Discuss the importance of knowledge of hydrology for hydropower project. **7**

3. What is meant by hydro - power ? Compare hydro-power with thermal power w.r.t. Indian conditions. **14**

4. How do you classify a hydro - electric scheme on the basis of its operating head ? Explain briefly. **14**

5. A common load is shared by two hydel stations; one being a base load station with 20MW installed capacity, and the other being a standby station with 25 MW capacity. The yearly output of the standby station is 10×10^6 kWh and that of the base load plant as 110×10^6 kWh. The peak load taken by standby station is 12 MW and this station works for 2500 hours during the year. The base load station takes a peak of 18 MW. Find out; **14**

   (a) Annual load factors for both stations

   (b) Plant use factors for both stations

   (c) Capacity factors for both stations.

6. Discuss the factors which are considered in the selection of the site for a proposed dam. **14**

7. Enumerate various types of spillways, and describe in details the most widely used type with neat sketch. **14**

8. Write short notes on *any four* of the following : **4x3½=14**

   (a) Forebay

   (b) Intakes

   (c) Penstock

   (d) Flow duration curve

   (e) Buttress dams

   (f) Surge tanks.

———