

**DIPLOMA IN CIVIL ENGINEERING
(DCLEVI)**

Term-End Examination

December, 2016

00913

BICEE-007 : WATER POWER ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Answer *five* questions in all. Question no. 1 is *compulsory*. Assume missing data, if any. Use of scientific calculator is permitted.

1. (a) The dependability of run-off river hydropower project is
- (i) 50%
 - (ii) 90%
 - (iii) 100%
 - (iv) 60%
- (b) The Reynolds Number is defined as the ratio of
- (i) Inertial force to viscous force
 - (ii) Gravity force to viscous force
 - (iii) Gravity force to inertial force
 - (iv) Viscous force to inertial force

- (c) The flow through penstocks and pressure conduits is generally
- (i) Laminar
 - (ii) Turbulent
 - (iii) Both laminar and turbulent
 - (iv) Neither laminar nor turbulent
- (d) Which of the following is an impulse turbine ?
- (i) Pelton
 - (ii) Francis
 - (iii) Kaplan
 - (iv) Tyson
- (e) For a concrete gravity dam, the resisting force to horizontal water pressure is provided by
- (i) Weight of water supported on upstream of the dam
 - (ii) Weight of the dam
 - (iii) Both (i) and (ii)
 - (iv) None of the above
- (f) Which of the following is true for earthen dams ?
- (i) They are costly.
 - (ii) Can be constructed on almost any type of foundation.
 - (iii) Highly skilled labour is required.
 - (iv) Less susceptible to failure as compared to rigid dams.

(g) Surge tanks are necessarily provided in

(i) Short Penstock

(ii) Pressure Tunnel

(iii) Long Penstock

(iv) Surface Penstock

$7 \times 2 = 14$

2. What are the applications of hydrology and hydrometeorology in water power engineering ? Discuss in detail.

14

3. What do you understand by Combined Power Systems and Grids ? How are they useful in water power engineering ?

14

4. What are the various load studies carried out for water power development ? Discuss Firm Power and Secondary Power.

14

5. Discuss, in detail, the classification of hydropower plants based on Operation and Storage and Pondage.

14

6. Compare the hydropower plant with thermal power plant.

14

7. What are gravity dams ? Describe them with the help of neat sketches. State the design criteria for gravity dams. 14
8. Discuss different types of surge tanks and also discuss the selection of turbine for run-off hydropower plants. 14
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