M. Tech.-III (Civil-Hydraulic Engineering) (CBCS – 2015 Course) :
WINTER - 2018
SUBJECT: ELECTIVE – II a) WATER POWER ENGINEERING

Day: Thursday | **W-2018-3163** | Time: 11.00 AM TO 02.00 PM
Date: 06/12/2018 | Max Marks : 60

N.B. :

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable calculator is **ALLOWED.**
4) Both the sections should be written in **SEPARATE** answer books.
5) Assume suitable data, if necessary.

SECTION - I

Q.1 Explain the difference in : **(10)**
i) High head diversion plant and Run of the river plant
ii) Single purpose and multipurpose plant

OR

Q.1 What is the need for prediction of future loads? Briefly explain the different methods used for estimation of future loads. **(10)**

Q.2 Explain in brief various empirical methods used for the estimation of runoff . State the limitations of these methods. **(10)**

OR

Q.2 Describe with a neat sketch **(10)**
i) Canal intake
ii) Tower intake.

Q.3 What is the function of anchor blocks? What are the forces which should be taken into account in their stability analysis? **(10)**

OR

Q.3 What are valves used in penstock? Explain with sketch as various types of valves with their suitability under different conditions. **(10)**

SECTION - II

Q.4 Explain the concept of water hammer as per **(10)**
i) rigid water column and
ii) elastic water column theory

OR

Q.4 List out the classifications of surge tanks. Compare the characteristics of cylindrical and restricted orifice type of surge tanks. **(10)**

Q.5 List different classification of turbines. Discuss and compare the characteristics of impulse and reaction turbines with the help of neat sketch. **(10)**

OR

Q.5 Explain in brief constructional features of Kapalan turbine and Pelton wheel turbine. **(10)**

Q.6 Draw a typical layout of high head under ground hydropower plant and explain various components of it. **(10)**

OR

Q.6 Compare between surface and under ground hydropower station with neat sketches. **(10)**

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