

Roll No.

24515

**B. Tech 7th Semester (Civil Engg.)
Examination – May, 2018**

HYDROPOWER ENGG.

Paper : CE-451-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each of the four Section. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) Define plant factor.
- (b) Write principal types of power plant.
- (c) Give the relation for theoretical power available from falling water.
- (d) Distinguish between load factor and plant factor.

- (e) Give the function of relief valve.
- (f) Define the term pondage.
- (g) Explain specific speed.
- (h) Write expression for unit power of a hydraulic turbine.
- (i) Differentiate between run off-river plant without pondage and run off river plant with pondage.
- (j) Factors supporting the construction of underground power house.

SECTION – A

- 2. (a) Define Hydro power. Compare hydropower wrt Indian conditions. 10
- (b) Discuss status of Hydropower world wide. 10
- 3. (a) Explain load factor, plant factor and capacity factor. 10
- (b) What are the different sources of energy ? Give the advantages of hydropower in power system. 10

SECTION – B

- 4. (a) Classify hydropower stations. Describe all of them in brief. 10

- (b) With the help of a neat sketch give the general layout of run off river. 10
5. (a) Differentiate between storage and pondage with the help of a neat sketch. 10
- (b) Explain pumped storage plant. 10

SECTION - C

6. (a) Describe different types of surge shaft Explain its salient features. 10
- (b) What are penstock ? Discuss its design criteria. 10
7. What do you mean by specific speed of water turbine ? What information does it give and how it is made use in practice. Explain how the form of reaction turbine depends upon specific speed ? 20

SECTION - D

8. Explain the different types of power house. Also describe the functions of different components in detail. 20

9. Draw general layout of power house. Also explain the merits and demerits of underground power house.

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