

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

9. Draw general layout of power house. Also explain the merits and demerits of underground power house. 20

SECTION - C

6. (a) Describe different types of surge shaft Explain its silent 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

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