SECTION – D

8. (a) Explain various efficiency of centrifugal pump.   8

   (b) Derive the expression for specific speed of pump.

   12

9. (a) Explain working principle, various parts of Reciprocating pump and classification with neat sketches.   12

   (b) Write down the differences between Centrifugal and Reciprocating pump with diagram.   8

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B. Tech. 4th Semester (Civil) Examination – May, 2017

FLUID MECHANICS-II

Paper : CE-204-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 : Students are required to attempt any *five* questions and students have to attempt *first* common question which is *compulsory*, and *one* question from each of four Sections.

1. (a) Uniform and Non-uniform flow.   2

   (b) Loss of head due to obstruction and Bend in pipe.

   2

   (c) Equivalent pipe.   2

   (d) Use of unit quantities.   2

(e) Constant speed curve. 2

(f) Component of centrifugal pump. 2

(g) Thoma's cavitation factor 2

(h) Hydraulic gradient line 2

(i) Brink depth analysis 2

(j) Shear stress in turbulent flow 2

SECTION – A

2. Water is flowing through a rough pipe of dia 500 mm and length 400 mm at the rate of 0.5 m^3/s. Find the power required to maintain this flow. Take the average height of roughness as K = 0.40 mm. 20

3. (a) Explain Total energy and Hydraulic gradient line with diagram. 08

   (b) A pipe line of 0.6 m dia is 1.5 km long. To increase the discharge, another line of the same dia is introduced parallel to the first in the second half of the length. Neglecting minor losses, find the increase in the discharge if uf = 0.04. The head at inlet is 300 mm. 12

SECTION – B

4. (a) Explain various type of flow in channel. 8

   (b) Derive the formula for most economical Trapezoidal channel. 12

5. Determine the length of back water curve caused by an afflux of 2.0 m in a rectangular channel of width 40 m and depth 2.5 m. Take slope as 1 in 11000 and Manning's N = 0.03. 20

SECTION – C

6. (a) A Pelton wheel is to be designed for a head of 60 m when running at 200 r.p.m. The Pelton wheel develops 95.6475 kw shaft power. The velocity of bucket 0.45 times. The velocity of the jet, overall efficiency = 0.85 and coefficient of the velocity is equal to 0.98. 15

   (b) Explain gross head and net head with the help of diagram. 5

7. (a) Explain various characteristic curve of hydraulic turbines. 12

   (b) Explain various type of turbines and various parts of turbines. 8