

**B.TECH SEM – V (2007 COURSE) (CIVIL ENGG.) : SUMMER -
2018**

SUBJECT: FLUID MECHANICS-II

Day: **Thursday**
Date: **24/05/2018**

S-2018-2657

Time: **10.00 AM TO 01.00 PM**
Max Marks: 80

N.B.:

- 1) **Q.No.1 and Q. No.5** are **COMPULSORY**. Out of the remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Use of non-programmable **CALCULATOR** is allowed.
- 5) Assume suitable data, if necessary and state it clearly.

SECTION-I

- Q.1**
- a) Differentiate between G.V.F.& R.V.F. **(05)**
 - b) Define drag and lift in case of submerged bodies. **(05)**
 - c) What are the factors Manning's roughness constant depends? **(04)**
- Q.2**
- a) What is hydraulically most efficient rectangular channel section? **(06)**
 - b) A rectangular channel carries water of the rate of 500 liter /sec .The bed slope of channel is 1 in 3000 Final most economical dimensions of channel. Take $C=60$. **(07)**
- Q.3**
- a) Discuss classification of surface profiles in case of GVF. **(06)**
 - b) Discuss surface profiles on mild slope. **(07)**
- Q.4**
- a) Write assumptions in case of Hydraulic jump. **(06)**
 - b) A flat plate 1m X 1m moves at 25 kmph in a stationary air of density at 1.15 kg/ m^3 . If $C_d = 0.17$ $C_l=0.65$, find lift force, drag force, resultant force and power required to keep plate in motion. **(07)**

SECTION-II

- Q.5**
- a) What are methods of priming centrifugal pump? **(05)**
 - b) What are gross and net head in case of turbine? **(05)**
 - c) What is surge tank and state its functions. **(04)**
- Q.6**
- a) Show that for curved moving plate when the jet striking centrally maximum efficiency is nearly 60 % . **(06)**
 - b) A jet of water 5 cm in diameter and having velocity 12 m/s strikes a flat plate normally. Determine the thrust when , **(07)**
 - i) The plate is stationary.
 - ii) The plate is moving with a velocity 5 m/s in the direction of jet.
- Q.7**
- a) What is governing of turbine? **(06)**
 - b) Final diameter of wheel and diameter of jet and number of jets required for Pelton wheel with following data : jet ratio = 12, power output = 3000kw $C_v = 0.97$, speed ratio = 0.46, Overall Efficiency = 90%, Head = 300m, $N = 720\text{rpm}$. **(07)**
- Q.8**
- a) What is NPSH in case of centrifugal pump? **(06)**
 - b) Why priming is necessary in case of centrifugal pump? **(07)**

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