Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: IV Marine Engineering

Regular Examination April – June 2015

2MR406 Fluid Mechanics and Hydraulics

Time: 3 Hours **Total Marks: 70**

Instruction: (1) Attempt all Questions.

(2) Assume suitable data if necessary.

(3) Figure to the right indicates full Marks.

(4) Start new Question on New Page.1

Section – I

Que. – 1 (a) Explain Continuity Equation [6]

(b) Give Relation between Absolute, Gauge, Atmospheric, and Vacuum Pressures. [6]

OR

Que. – 1 Explain Euler's Equation of Motion [12]

Que. – 2 (a) Define Buoyancy, Meta-centre, and Metacentric Height. [6]

(b) Types of Pressure measurement devise and explain simple U tube manometer with neat sketch. [5]

OR

Que. – 2 Conditions of Equilibrium of a floating and sub- Merged bodies with neat sketch. [11]

Que. – 3 The right limb of a simple U- tube manometer containing mercury is open to the atmosphere while the left limb is connected to a pipe in which a fluid of SP. Gravity 0.9 is flowing. The centre of the pipe is 12 cm below the level of mercury in the right limb. Find the pressure of fluid in the pipe if the difference of mercury level in the two limbs is 20 cm. [12]

Section – II

Que. – 4 (a) List the different types of Fluids. [6]

(b) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet. [6]

OR

Que. – 4 Show that the force exerted by a jet of water on an incliened fixed plate in the directoin of the jet is given by, [12]

$$F_x = \rho a V 2 \sin 2\theta$$ Where

a=Area of the jet, V= velocity of the jet, θ =Inclination of the plate with the jet

Que. – 5 (a) Explain Capillarity with sketch. [6]

(b) Explain Surface tension with neat sketch. [5]

OR

Que. – 5 Explain pelton wheel and Francis turbine [11]

Que. – 6 Describe Impulse reaction turbine with neat sketch [12]

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