Roll No. .....

24087

B. Tech 3rd Semester (AUE)

Examination – December, 2017

FLUID MECHANICS AND MACHINERY

Paper : AUE-203-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 Unit. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. (a) Define the term specific gravity. Give its units.

$5 \times 4 = 20$

(b) What is gauge pressure ? How it can be measured.

(c) What is laminar and turbulent flow ? Discuss.

(d) What is streak line and path line ?

(e) What is specific speed ? Discuss.

UNIT – I

2. Derive the expression of hydrostatic force and centre of pressure in case of curved surface. 20

3. Write short notes on determination of compressibility, Newtonian and non-Newtonian fluids, and stability of floating body. 20

UNIT – II

4. Derive the Bernoulli's equation along a stream line giving its assumption made. List out its engineering applications. 20

5. Derive the continuity equation in cylindrical coordinates. 20

UNIT – III

6. A laminar flow is taking place in a pipe of diameter of 200 mm. The maximum velocity is 1.5 m/s. Find the mean velocity and radius at which this occur. Also calculate the velocity at 4 cm from the wall of pipe. 20

7. Write short notes on important dimensionless numbers and their significance, geometric, kinetic and dynamic similarity. 20

UNIT – IV

8. Discuss the construction working of Turbo blowers and turbines. 20

9. Explain the principles of operations of centrifugal and axial pumps. 20