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18C75

B. Tech. EXAMINATION, 2020

(Third Semester)

(C Scheme) (Main & Re-appear)

(CE)

CE205C

FLUID MECHANICS

Time : 2½ *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks. Assume any data if missing.

1. (a) Find out the minimum size of glass tube that can be used to measure water level if the capillary rise in the tube is to be restricted to 2 mm. Consider surface tension of water in contact with air as 0.073575.

(b) What do you understand by Cavitation and Compressibility ?

2. (a) What do you understand by Capillary Fall and Capillary Rise ? Derive the expression for them.

(b) Find the surface tension in a soap bubble of 30 mm diameter when the inside pressure is 1.962 N/m^2 above atmosphere.

3. (a) How will you determine the metacentric height of a floating body experimentally ? Explain with neat sketch.

(b) Define the terms–meta centre, centre of buoyancy, gauga pressure and absolute pressure.

4. (a) Differentiate between the following :

(i) Simple and differential manometers.

(ii) Compressible and uncompressible flow.

(iii) Laminar and turbulent flow.

(b) Describe the stability of floating body concept with the help of sketch.

5. What do you understand by major loss and minor losses ? Explain all types of major and minor losses in pipes.

6. (a) Explain the following :

(i) Energy gradient line

(ii) Pitot tube

(iii) Energy correction factor.

(b) What do you understand by flow measuring devices ? List all types of flow measuring device. Explain the expression of flow measured by venturimeter.

7. (a) Explain the concept boundary layer separation. What is the effect of pressure gradient on boundary layer separation ? Explain with the help of sketch.

(b) Define the terms–Laminar boundary layer, Turbulent boundary Layer, laminar sublayer with neat sketches.

8. (a) What are the different methods of preventing the separation of boundary layer ?

(b) What do you understand by drag and lift concept ? Distinguish between deformation drag and surface drag.