

**B. SC. (APPLIED SCIENCE AND
ENERGY)**

(BSCAEY)

Term-End Examination

December, 2024

BEY–003 : FLUID MECHANICS

Time : 3 Hours

Maximum Marks : 70

Note : (i) Attempt any *seven* questions.

(ii) All questions carry equal marks.

(iii) Use of scientific calculator is allowed.

(iv) Assume suitable data, if any.

1. What are the various properties of fluids ?
Explain any *four* properties in detail. 10
2. (a) What is a control volume ? Explain the
concept of control volume and its
applications. 5

- (b) Determine the total force and its location on the face of an annular disk (circular disk with a hole) with outer and inner diameters of 2 m and 1 m respectively located vertically 2 m below the water surface. 5
3. What is Buoyancy ? Discuss the stability of bodies immersed in a fluid. 10
4. With the help of neat sketches, explain the various types of fluid flow. 10
5. Derive Euler's equation in a streamline coordinates. 10
6. With the help of a neat sketch, describe the construction and working principle of any *one* fluid pressure measuring device. 10
7. (a) Show that the viscous terms become zero for irrotational flow of incompressible fluids. 5

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- (b) Two plain boundaries are 6.5 mm apart, the space between them is filled with a liquid of viscosity of 1.2 kg/m-s. What force would be required to move edgewise through the liquid, a plate of 3 mm thick and 25 cm² of area at a velocity of 15 cm/sec ? 5

8. Define the following : 2×5=10

- (a) Density
- (b) Viscosity
- (c) Reynolds' number
- (d) Surface tension
- (e) Flow net

9. Define 'Boundary Layer Separation'. Discuss the methods of controlling separation. 10

10. Write short notes on any *two* of the following :

5+5

- (a) Drag and lift
- (b) Lift on Aerofoil
- (c) River Models
- (d) Eddy viscosity

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