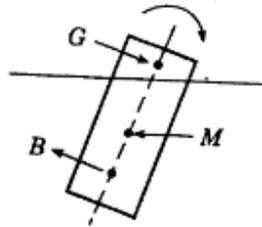


A PREPARATORY COURSE FOR RECRUITMENT EXAMS (JUNIOR ENGINEER/CIVIL)

FLUID MECHANICS

- angular displacements. This point is called
- (a) centre of gravity
 (b) centre of buoyancy
 (c) meta centre
 (d) centre of pressure
- Q.66. For the stability of a floating body, meta centre(M) must be
- (a) below C.G.
 (b) on C.G.
 (c) below centre of buoyancy
 (d) above C.G.
- Q.67. A body is floating as shown in the given figure. The centre of buoyancy, centre of gravity and metacentre are labelled respectively as B, G, and M. The body is



- (a) vertically stable
 (b) vertically unstable
 (c) rotationally stable
 (d) rotationally unstable
- Hint: Option (d). Metacentre is below centre of gravity the body is in unstable equilibrium in rotation.
- Q.68. A homogeneous circular cylinder of length h , radius r , and specific gravity s , floats in water. It is noted that $r = (2/3)h$. Under which one in the following conditions will the floatation be unstable?
- (a) $0.11 \leq s < 0.22$
 (b) $0.22 \leq s < 0.33$
 (c) $0.33 \leq s < 0.66$
 (d) $0.66 \leq s \leq 0.99$
- Q.69. For a fluid, if density, pressure, and velocity do not change at a given point with the passage of time, then this flow is called
- (a) unsteady flow
 (b) steady flow
 (c) non uniform flow
 (d) uniform flow

- Q.70. For a fluid if flow characteristics at any given time remain same at different points in the direction of flow, then the flow is called
- (a) unsteady flow
 (b) steady flow
 (c) non uniform flow
 (d) uniform flow
- Q.71. For a fluid if flow characteristics at any given time change with distance, then the flow is called
- (a) unsteady flow
 (b) steady flow
 (c) non uniform flow
 (d) uniform flow
- Q.72. Match List I with List II and select the correct answer using the codes given below the lists:
- List I(Type of flow)
- A. Rotational
 B. Vortex
 C. Free
 D. Forced
- List II(Description)
1. A fluid motion in which streamlines are concentric circles
 2. The fluid particles moving in concentric circles may not rotate about their mass centre
 3. The fluid particles moving in concentric circles may rotate
 4. Flow near a curved solid boundary
- Codes:
- (a) A4, B2, C3, D1
 (b) A1, B2, C3, D4
 (c) A1, B3, C2, D4
 (d) A4, B1, C2, D3
- Q.73. The flow of water in a wash basin when it is being emptied through a central opening, is an example of
- (a) free vortex
 (b) forced vortex
 (c) rotational vortex
 (d) Rankine vortex
- Hint: Option (a) is correct Free vortex flow is irrotational flow and total head (energy) remains constant throughout flow field.