1 The total pressure force on a plane area is equal to the area multiplied by the intensity of pressure at its centroid, if

A. area is horizontal

B. area is vertical

C. area is inclined

D. all the above.

Ans D (1)

2 If the volume of a liquid weighing 3000 kg is 4 cubic metres, 0.75 is its

A. specific weight

B. specific mass

C. specific gravity

D. none of these.

Ans C (1)

3. The moment of inertia of a floating body along its longitudinal axis and the volume of water displaced by it are I and V respectively. The height of the metacentre above centre of buoyancy of the body, is

A. $\frac{I}{2V}$

B. $\frac{2I}{V}$

C. $\frac{I}{V}$

D. $\frac{3I}{V}$

E. $\left(\frac{I}{V}\right)^2$

Ans C (1)

4 When a body is totally or partially immersed in a fluid, it is buoyed up by a force equal to

A. weight of the body

B. weight of the fluid displaced by the body

C. weight of the body and fluild displaced by the body

D. difference of weights of the fluid displaced and that of the body

E. none of these.

Ans B (1)

5. A piezometer opening in pipes measures

A. velocity head

B. static pressure

C. total pressure

D. negative static pressure.

Ans B (1)

6. The horizontal component of the force on a curved surface is equal to

A. weight of liquid vertically below the curved surface

B. force on a vetical projection of the curved surface

C. product of pressure at its centroid and the area

D. weight of liquid retained by the curved area.

Ans D (1)

7. Differential manometers are used to measure

A. pressure in water channels, pipes, etc.

B. difference in pressure at two points

C. atmospheric pressure

D. very low pressure.

Ans B (1)

8. Hydraulic ram is a device

A. for lifting water without an electric motor

B. for accelerating water flow

C. for lifting heavy loads

D. none of these.

Ans A (1)

9. Gauge pressure is

A. absolute pressure - atmospheric pressure

B. absolute pressure + atmospheric pressure

C. atmospheric pressure - absolute pressure

D. none of these.

Ans A (1)

10. Water displaced by a floating wooden block of density 0.75, 5 m long, 2 m wide and 3 m high, is

A. 17.5 m^3

B. 20.0 m^3

C. 22.5 m^3

D. 25 km^3

Ans C (1)

11 Mercury is generally used in barometers because

A. its vapour pressure is practically zero

B. the height of the barometer will be less

C. it is a best liquid

D. both (a) and (b) above

E. both (b) and (c) above.

Ans D (1)

12. Barometres are used to measure

A. pressure in water channels, pipes etc.

B. difference in pressure at two points

C. atmospheric pressure

D. very low pressure

E. very high pressure.

Ans C (1)

13 For exerting a pressure of 4.8 kg/cm^2, the depth of oil (specific gravity 0.8), should be

A. 40 cm

B. 41 cm

C. 56 cm

D. 60 cm

Ans D (1)

14. Atmospheric pressure varies with

A. altitude

B. temperature

C. weather conditions

D. none of these.

Ans D (1)

15. On an inclined plane, centre of pressure is located

A. at the centroid

B. above the centroid

C. below the centroid

D. anywhere.

Ans C (1)

16 Atmospheric pressure is equal to water column head of

A. 9.81 m

B. 5.0 m

C. 10.30 m

D. 7.5 m.

Ans C (1)

17 Piezometers are used to measure

A. pressure in water channels, pipes etc.

B. difference in pressure at two points

C. atmospheric pressure

D. very low pressure.

Ans D (1)

18 Pascal's law is used in

A. hydraulic jack

B .hydraulic press

C hydraulic lift

D all of the above

Ans D (1)

19. A rectangular plane surface 3m wide and 4m deep lies in water such that it makes 45^{o} with free water surface .Its upper edge is 3m below water surface .The total pressure is

A. 520kN

B. 720kN

C. 450kN

D. 900kN

Ans A (1)

20 The hydrostatic force acts through

A. centre of pressure

B. centre of top edge

C. centre of bottom edge

D. metacentre.

Ans A (1)

21 If H is the depth of water retained by a vertical wall, the height of centre of pressure above the bottom is

A. $\frac{H}{2}$

B. $\frac{H}{3}$

C. $\frac{2H}{3}$

D. $\frac{H}{5}$

Ans A (1)

22 Centre of buoyancy is

A. centroid of the floating body

B. centroid of the fluid displaced

C. centre of pressure of the displaced liquid

D. none of these.

Ans B (1)

23 The centre of pressure of a vertical plane immersed in a liquid is at

A. centre of higher edge

B. centre of lower edge

C. centroid of the area

D. none of these.

Ans D (1)

24 A floating body attains stable equilibrium if its metacentre is

A. at the centroid

B. above the centroid

C. below the centroid

D. anywhere.

AnsB (1)

Subject : Fluid Mechanics -1

Unit:2(Fluid Statics)