BCM SCHOOL, BASANT AVENUE, DUGRI ROAD, LDH

ASSIGNMENT OF MONTH DECEMBER

CLASS - XI

SUBJECT - PHYSICS

CHAPTER – MECHANICAL PROPERTIES OF FLUIDS

Exam Pattern Exercise

Part A - Objective Questions

Multiple Choice Questions

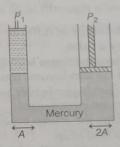
- 1. Average pressure pay is defined as

 - (a) $p_{av} = \frac{F}{A}$ (b) $p_{av} = \frac{V}{F}$

 - (c) $p_{av} = \frac{A}{F}$ (d) $p_{av} = \frac{F}{V}$
- 2. The density of water at 4°C is
 - (a) $1.0 \times 10^3 \text{ kgm}^{-3}$ (b) $4 \times 10^2 \text{ kgm}^{-3}$

 - (c) $6 \times 10^3 \text{ kgm}^{-3}$ (d) $3.2 \times 10^3 \text{ kgm}^{-3}$
- 3. If two liquids of same mass but densities p, and p, respectively are mixed, then density of mixture is given by

- (a) $\rho = \frac{\rho_1 + \rho_2}{2}$ (b) $\rho = \frac{\rho_1 + \rho_2}{2 \rho_1 \rho_2}$ (c) $\rho = \frac{2 \rho_1 \rho_2}{\rho_1 + \rho_2}$ (d) $\rho = \frac{\rho_1 \rho_2}{\rho_1 + \rho_2}$
- 4. Three liquids of densities d, 2d and 3d are mixed in equal proportion of weights. If density of water is d, then the specific gravity of the mixture is
- (a) $\frac{11}{7}$ (b) $\frac{18}{11}$ (c) $\frac{13}{9}$ (d) $\frac{23}{18}$
- 5. Pressure at a point inside a liquid does not depend on
 - (a) the depth of the point below the surface of the liquid.
 - (b) the nature of the liquid.
 - (c) the acceleration due to gravity at that point.
 - (d) total weight of fluid in the beaker.
- 6. Pascal's law states that pressure in a fluid at rest is the same at all points, if
 - (a) they are at the same height
 - (b) they are along same plane
 - (c) they are along same line
 - (d) Both (a) and (b)
- 7. A hydraulic lift has 2 limbs of areas A and 2A. Force F is applied over limb of area A to lift a heavy car. If distance moved by piston P_1 is x, then distance moved by piston P_2 is



- (d) 4x
- 8. In figure, pressure inside a spherical drop is more than pressure outside. (S =surface tension and r = radius of bubble



The extra surface energy if radius of bubble is increased by Δr is

- (a) $4\pi r \Delta r S$
- (b) $8\pi r \Delta r S$
- (c) $2\pi r \Delta r S$
- (d) $10\pi r \Delta r S$
- 9. Radius of a soap bubble is increased from R to 2R. Work done in this process in terms of surface tension is
 - (a) $24 \pi R^2 S$
- (b) $48 \pi R^2 S$
- (c) $12\pi R^2 S$
- (d) $36\pi R^2 S$
- 10. The angle of contact at the interface of water-glass is 0°, ethyl alcohol-glass is 0°, mercury-glass is 140° and methyliodide-glass is 30°. A glass capillary is put in a trough containing one of these four liquids. It is observed that the meniscus is convex. The liquid in the trough is
 - (a) water
- (b) ethylalcohol
- (c) mercury
- (d) methyliodide
- 11. The excess pressure inside an air bubble of radius r just below the surface of water is p_1 . The excess pressure inside a drop of the same radius just outside the surface is p_2 . If T is surface tension, then

- (a) $p_1 = 2p_2$ (b) $p_1 = p_2$ (c) $p_2 = 2p_1$ (d) $p_2 = 0, p_1 \neq 0$

12.	In a soap bubble,	pressure difference is
	(a) $\frac{2S_{la}}{r}$	(b) $\frac{4S_{la}}{}$

(c)
$$\frac{S_{la}}{r}$$

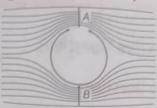
- (a) air flows from the bigger bubble to the smaller bubble till the sizes become equal
- (b) air flows from bigger bubble to the smaller bubble till the sizes are interchanged
- (c) air flows from the smaller bubble to the bigger
- (d) there is no flow of air
- 14. A 20 cm long capillary tube is dipped in water. The water rises up to 8 cm. If the entire arrangement is put in a freely falling elevator the length of water column in the capillary tube will be
 - (a) 4 cm
- (b) 20 cm
- (c) 8 cm
- (d) 10 cm

15. In a streamline flow,

- (a) the speed of a particle always remains same
- (b) the velocity of a particle always remains same
- (c) the kinetic energies of all the particles arriving at a given point are the same
- (d) the potential energies of all the particles arriving at a given point are the same
- 16. In a turbulent flow, the velocity of the liquid molecules in contact with the walls of the tube is
 - (a) zero
 - (b) maximum
 - (c) equal to critical velocity
 - (d) may have any value
- 17. Two water pipes of diameters 2 cm and 4 cm are connected with the main supply line. The velocity of flow of water in the pipe of 2 cm diameter is
 - (a) 4 times that in the other pipe
 - times that in the other pipe
 - (c) 2 times that in the other pipe
 - (d) $\frac{1}{2}$ times that in the other pipe
- 18. An ideal fluid flows through a pipe of circular cross-section made of two sections with diameters 2.5 cm and 3.75 cm. The ratio of the velocities in the two pipes is (NCERT Exemplar)

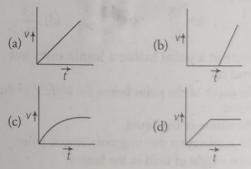
- (a) 9:4 (b) 3:2 (c) $\sqrt{3}:\sqrt{2}$ (d) $\sqrt{2}:\sqrt{3}$

19. A ball is moving without spinning in a straight line through a fluid (as shown)



If p_A and p_B are pressure values at A and B, then

- (a) $p_A < p_B$ (b) $p_B < p_A$
- (c) $p_A \times p_B = 1$
- (d) $p_A / p_B = 1$
- 20. A cylinder of height 20 m is completely filled with water. The velocity of efflux of water (in ms-1) through a small hole on the side wall of the cylinder near its bottom is
 - (a) 10
- (c) 25.5
- (d) 5
- 21. The coefficient of viscosity for hot air is
 - (a) greater than the coefficient of viscosity for cold air
 - (b) smaller than the coefficient of viscosity for cold air
 - (c) same as the coefficient of viscosity for cold air
 - (d) increases or decreases depending on the external pressure
- 22. A tall cylinder is filled with viscous oil. A round pebble is dropped from the top with zero initial velocity. From the plot shown in figure, indicate the one that represents the velocity (ν) of the pebble as a function of time (t) (NCERT Exemplar)



- 23. As the temperature of water increases, its viscosity
 - (a) remains unchanged
 - (b) decreases
 - (c) increases
 - (d) increases or decreases depending on the external
- 24. Reynold's number (R_e) can be defined as