

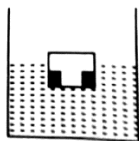


Max. Marks: 200

Date: 16.10.2022

ABHIMANYU BATCH
PHYSICS : PART TEST SET - B
Topic: Fluids

1. An ice block having two similar metallic pieces is floating in water in a vessel as shown in figure. After sometime the ice melts completely then

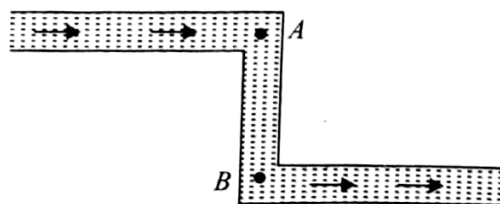


- (a) the water level rises in the vessel
(b) the water level falls in the vessel
(c) the water level does not change in vessel
(d) the water level may rise or fall depending upon the ratio of masses of ice and metallic pieces.
2. An adulterated sample of milk has a density 1032 kg m^{-3} , while pure milk has a density of 1080 kg m^{-3} . Then the volume of pure milk in a sample of 10 litres of adulterated milk is
- (a) 1 litre (b) 2 litre (c) 3 litre (d) 4 litre
3. A body is just floating on the surface of liquid. The density of the body is same as that of the liquid. The body is slightly pushed down. Then it will
- (a) come back slowly to its earlier position (b) remain submerged where it is left.
(c) sink in liquid (d) come out vigorously
4. Streamline flow is more likely for liquids with
- (a) high density and high viscosity (b) low density and low viscosity
(c) high density and low viscosity (d) low density and high viscosity

Space for Rough Work



5. When the flow parameters of any given instant remain same at every point, then flow is said to be
 (a) laminar (b) steady state (c) turbulent (d) quasi static
6. An ideal flow of any fluid must satisfy
 (a) Pascal law (b) Stokes law
 (c) continuity equation (d) Bernoulli's theorem
7. Water is flowing continuously from a tap having an internal diameter 8×10^{-3} m. The water velocity as it leaves the tap is 0.4 m s^{-1} . The diameter of the water stream at a distance 2×10^{-1} m below the tap is close to
 (a) 5.0×10^{-3} m (b) 7.5×10^{-3} m (c) 9.6×10^{-3} m (d) 3.6×10^{-3} m
8. In the figure shown an ideal liquid is flowing through the tube which is of uniform area of cross-section. The liquid has velocities V_A and V_B , and pressures P_A and P_B at points A and B respectively. Then

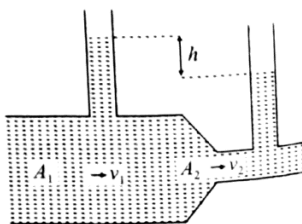


- (a) $V_B > V_A$ (b) $V_B = V_A$ (c) $p_B < p_A$ (d) $p_B = p_A$
9. An ideal fluid flows through a pipe of circular cross-section made of two sections with diameters 2.5 cm and 3.75 cm. The ratio of the velocities in the two pipes is
 (a) 9 : 4 (b) 3 : 2 (c) $\sqrt{3} : \sqrt{2}$ (d) $\sqrt{2} : \sqrt{3}$
10. The cylindrical tube of a spray pump has a cross-section of 6 cm^2 one of which has 50 holes each of diameter 1 mm. If the liquid flow inside the tube is 12 m per minute, then the speed of ejection of the liquid through the holes is
 (a) 2.1 ms^{-1} (b) 0.31 ms^{-1} (c) 0.96 ms^{-1} (d) 3.4 ms^{-1}

Space for Rough Work



11. Bernoulli's equation for steady, non-viscous incompressible flow expresses the
- (a) conservation of linear momentum (b) conservation of angular momentum
- (c) conservation of energy (d) conservation of mass
12. In old age arteries carrying blood in the human body become narrow resulting in an increase in the blood pressure. This follows from
- (a) Pascals law (b) Stokes law
- (c) Bernoulli's principle (d) Archimedes principle
13. Applications of Bernoulli's theorem can be seen in
- (a) dynamic lift of aeroplane (b) hydraulic press
- (c) helicopter (d) none of these
14. A liquid flows through a horizontal tube as shown in figure. The velocities of the liquid in the two sections which have areas of cross-section A_1 and A_2 , are v_1 and v_2 , respectively. The difference in the levels of the liquid in the two vertical tubes is h . Then



- (a) $v_2^2 - v_1^2 = 2gh$ (b) $v_2^2 + v_1^2 = 2gh$ (c) $v_2^2 - v_1^2 = gh$ (d) $v_2^2 + v_1^2 = gh$

Space for Rough Work



15. Which of the following figure shown below is correct regarding the steady flow of a non viscous liquid?



16. The pressure at depth h below the surface of a liquid of density ρ open to the atmosphere is
- greater than the atmospheric pressure by ρgh
 - less than the atmospheric pressure by ρgh
 - equal to the atmospheric pressure
 - increases exponentially with depth
17. The force acting on a window of area $50 \text{ cm} \times 50 \text{ cm}$ of a submarine at a depth of 2000 m in an ocean, the interior of which is maintained at sea level atmospheric pressure is (Density of sea water = 10^3 kg m^{-3})
- $5 \times 10^5 \text{ N}$
 - $25 \times 10^5 \text{ N}$
 - $5 \times 10^6 \text{ N}$
 - $25 \times 10^6 \text{ N}$
18. A tank with a square base of area 2 m^2 is divided into two compartments by a vertical partition in the middle. There is a small hinged door of face area 20 cm^2 at the bottom of the partition. Water is filled in one compartment and an acid of relative density 1.53 in the other, both to a height of 4 m . The force necessary to keep the door closed is (Take $g = 10 \text{ ms}^{-2}$)
- 10 N
 - 20 N
 - 40 N
 - 80 N
19. Some iron beads are embedded in wax ball which is just floating in water. The volume of ball is 18 cm^3 and relative density of wax is 0.9 . Then mass of the iron trapped in the ball is
- 1.8 g
 - 2.7 g
 - 16.8 g
 - 8.1 g

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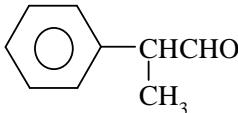
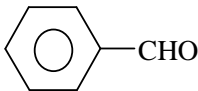


20. Hydraulic brakes are based on
 (a) Pascal's law (b) Torricelli's law (c) Newton's law (d) Boyle's law
21. A piece of solid weighs 120 g in air, 80 g in water and 60 g in a liquid. The relative density of the solid and that of the liquid are respectively
 (a) $2, \frac{1}{2}$ (b) $2, \frac{3}{2}$ (c) $3, \frac{1}{2}$ (d) $3, \frac{3}{2}$
22. A block of wood floats in water with $\left(\frac{4}{5}\right)^{\text{th}}$ of its volume submerged. If the same block just floats in a liquid, the density of the liquid (in kg m^{-3}) is
 (a) 1250 (b) 600 (c) 400 (d) 800
23. Iceberg floats in sea water with a part of it submerged. The percentage fraction of the ice berg submerged is (Density of ice = 0.9 g cm^{-3} , density of sea water = 1.1 g cm^{-3})
 (a) 18% (b) 12% (c) 10% (d) 8%
24. A body of mass 100 kg and density 500 kg m^{-3} floats in water. The additional mass should be added to the body so that the body will sink is
 (a) 80 kg (b) 100 kg (c) 150 kg (d) 200 kg
25. A man is sitting in a boat which is floating in a pond. If the man drinks some water from the pond, the level of water in the pond
 (a) increases
 (b) decreases
 (c) remains unchanged
 (d) increases or decreases depends upon the weight of man

Space for Rough Work

**BJNP***Learning with the Speed of Mumbai and the Tradition of Kota***Date: 16.10.2022**

ABHIMANYU BATCH
CHEMISTRY : PART TEST SET-B
Topic: Full Organic

26. Which of the following is not an electrophile?
(a) BF_3 (b) CO_2 (c) NH_4^+ (d) CH_3^+
27. Glucose contains
(a) One – CHO group (b) Five – OH groups
(c) One primary alcoholic group (d) All are correct
28. Which of the following gives Aldol condensation reaction?
(a) $(\text{CH}_3)_3\text{CCHO}$ (b) CCl_3CHO
(c)  (d) 
29. The hormone that helps in the conversion of glucose to glycogen is
(a) Adrenaline (b) Insulin (c) Cortisone (d) Bile acids
30. In aldehydes and ketones, carbon of carbonyl group is
(a) sp^3 hybridized (b) sp^2 hybridized (c) sp hybridized (d) Unhybridised
31. The decomposition of a certain mass of CaCO_3 gave 11.2 of gas at STP. The mass of KOH required to completely neutralise the gas is
(a) 56 g (b) 28 g (c) 42 g (d) 20 g
32. Which one of the following methods is not related to amines?
(a) Curtius reaction (b) Wurtz reaction (c) Hofmann method (d) Hinsberg method

Space for Rough Work



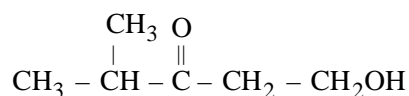
33. The weakest +m group o the given species is:

- (a) $-\text{OCH}_3$ (b) $-\text{F}$ (c) $-\text{I}$ (d) $-\text{N}(\text{CH}_3)_2$

34. What amount of bromine will be required to convert 2 g of phenol into 2, 4, 6-tribromophenol

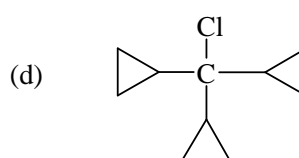
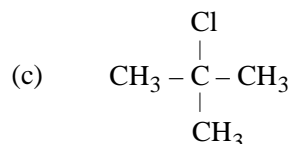
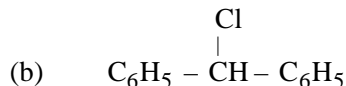
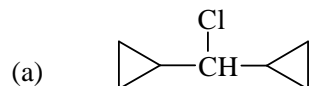
- (a) 4.00 (b) 10.22 (c) 6.00 (d) 20.44

35. The IUPAC name of the following compound is



- (a) 1-Hydroxy-4-methyl-3-pentanone (b) 2-Methyl-5-hydroxy-3-pentanone
(c) 4-Methyl-3-oxo-1-pentanol (d) Hexanol-1-one-3

36. Which one of the following will be most reactive for reaction?



37. Two monomers in maltose are :

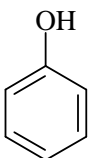
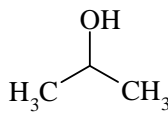
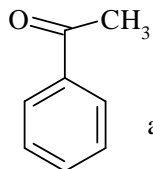
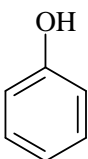
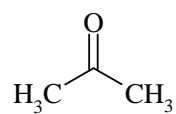
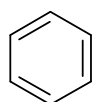
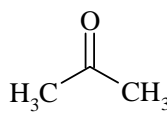
- (a) α -D-glucose and β -D-glucose (b) α -D-glucose and α -D-Fructose
(c) α -D-glucose and α -D-glucose (d) α -D-glucose and α -D-galactose

38. The following compound can be classified as N, N-dimethylpropanamine, N-methyl Ethanamine and aniline

- (a) Primary, secondary, tertiary (b) Primary, tertiary, secondary
(c) Tertiary, secondary, primary (d) Tertiary, primary, secondary

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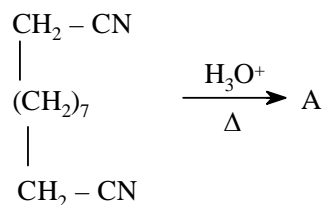


39. Petrol for aviation purpose must contain
- (a) straight chain hydrocarbons (b) aromatic hydrocarbons
- (c) olefinic hydrocarbons (d) highly branched chain paraffins
40. Which of the following is correct statement
- (a) Proteins are amino acid (b) α -hydrogen is present in fructose
- (c) Starch is polymer of α -glucose (d) Amylose is compound of cellulose
41. The non-protein portion of an enzyme is called
- (a) Functional group (b) Characteristic group
- (c) Prosthetic group (d) Enolic group
42. The product formed in the reaction of cumene with O_2 followed by treatment with dil.HCl are
- (a)  and  (b)  and $CH_3 - OH$
- (c)  and  (d)  and 
43. Isopropyl chloride undergoes hydrolysis by
- (a) Either S_N1 or S_N2 mechanism (b) Neither S_N1 nor S_N2 mechanisms
- (c) S_N1 mechanism only (d) S_N2 mechanism only
44. Deficiency of vitamin A leads to a disease known as
- (a) Scurvy (b) Night blindness (c) Beriberi (d) Rickets

Space for Rough Work



45. In the given structure number of oxygen atoms in A is



- (a) 6 (b) 4 (c) 2 (d) 5

46. In order to make alcohol undrinkable pyridine and methanol are added to it. The resulting alcohol is called

- (a) Power alcohol (b) Proof spirit (c) Denatured spirit (d) Poison alcohol

47. The reagent used for separation of acetaldehyde and acetophenone is

- (a) NaHSO_3 (b) $\text{C}_6\text{H}_5\text{NHNH}_2$ (c) NH_2OH (d) NaOH-I_2

48. Geometrical isomerism is possible in:

- (a) Butene-2 (b) Ethene (c) Propane (d) Propene

49. Which is an electrophile

- (a) AlCl_3 (b) CN^- (c) NH_3 (d) CH_3OH

50. Amino acids are produced on hydrolysis of

- (a) Nucleic acid (b) Carbohydrates (c) Fats (d) Proteins

Space for Rough Work



Max. Marks: 200

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ABHIMANYU BATCH
PHYSICS : PART TEST SET - B ANSWER KEY
Topic: Fluids

1.	(b)	2.	(d)	3.	(c)	4.	(d)	5.	(b)
6.	(c)	7.	(d)	8.	(b)	9.	(a)	10.	(b)
11.	(c)	12.	(c)	13.	(a)	14.	(a)	15.	(a)
16.	(a)	17.	(c)	18.	(c)	19.	(a)	20.	(a)
21.	(d)	22.	(d)	23.	(a)	24.	(b)	25.	(c)

ABHIMANYU BATCH
CHEMISTRY : PART TEST SET-B ANSWER KEY
Topic: Full Organic

26.	(c)	27.	(d)	28.	(c)	29.	(b)	30.	(b)
31.	(a)	32.	(b)	33.	(c)	34.	(b)	35.	(a)
36.	(d)	37.	(c)	38.	(c)	39.	(d)	40.	(c)
41.	(c)	42.	(c)	43.	(a)	44.	(b)	45.	(b)
46.	(c)	47.	(a)	48.	(a)	49.	(a)	50.	(d)