

**Answer the following questions (21 & 22):**

- 21** Mention one of the reasons for the formation of ocean currents, and what is the importance of these currents?

Differences in temperature cause water to move.  
They redistribute heat and nutrients

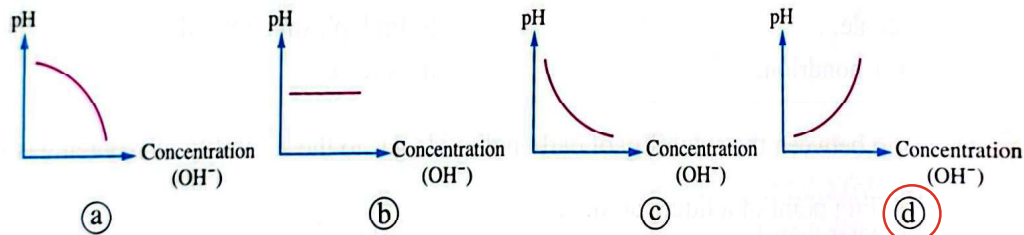
- 22** Mention two biological adaptations for the aquatic organisms that live at deep-depths to adapt with the high pressure in these depths.

Flexible bodies and slow metabolism

**Exam 7 ? Answered**

**Choose the correct answer (1 : 20):**

- 1** Which of the following graphs expresses the relation between the pH value and the concentration of  $(OH^-)$  ions?



- 2** A quantity of pure water has a volume of  $1\text{ m}^3$  at a temperature of  $4^\circ\text{C}$ , its temperature dropped to the freezing point, then the volume of this quantity when it turns into ice with a density of  $917\text{ kg/m}^3$  is approximately equal to .....
- (a)  $1.03\text{ m}^3$       (b)  $1.05\text{ m}^3$       (c)  $1.09\text{ m}^3$       (d)  $1.04\text{ m}^3$

- 3** Which of the following statements is correct about collenchyma tissue?

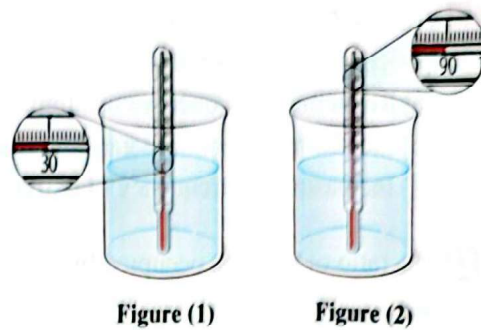
- (a) It is composed of non-living rigid cells.  
(b) It provides some strength in addition to elasticity and flexibility to the plant.  
(c) It forms most of the soft tissues in the plant.  
(d) Its cell walls consist of cellulose and lignin.

- 4** The ratio between the osmotic pressure of fresh water to the osmotic pressure of body fluids inside fish that live in this water is .....

- (a) greater than 1      (b) equal to 1  
(c) less than 1      (d) the answer can't be determined

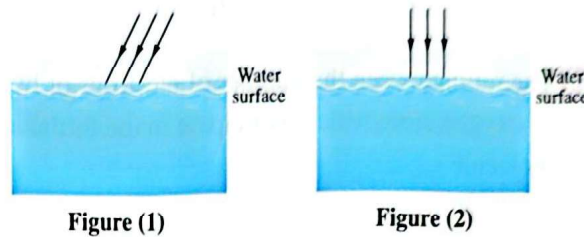
5 A beaker contains 220 g of water as shown in figure (1). If the specific heat of water is  $4200 \text{ J/kg.K}$ , so the amount of heat required to raise the temperature of water to be as shown in figure (2) is .....

- (a) 55440 J                      (b) 81900 J  
(c) 44550 J                      (d) 95550 J



6 Two beams of solar radiation of equal intensity are incident on the surface of water, one is inclined and the other is perpendicular, as shown in the opposite figures, so the light energy that penetrates the surface will be .....

- (a) greater in figure (1)                      (b) greater in figure (2)  
(c) equal in the two figures                      (d) zero in the two figures



7 A fish with a body surface area of  $0.1 \text{ m}^2$  is at a depth of 5 m from the water surface, then the pressing force acting on the body of the fish is equal to .....  
(Knowing that:  $1 \text{ atm} = 1.013 \times 10^5 \text{ N/m}^2$ )

- (a)  $10^3 \text{ N}$     (b)  $5.1 \times 10^3 \text{ N}$   
(c)  $1.5 \times 10^4 \text{ N}$     (d)  $2.5 \times 10^4 \text{ N}$

8 If the boiling point of a liquid at the top of a mountain is  $110^\circ\text{C}$ , then the boiling point of the same liquid at the Earth's surface could be .....

- (a) higher than  $383 \text{ K}$     (b) equal to  $383 \text{ K}$   
(c) less than  $383 \text{ K}$     (d) the answer can't be determined

9 Which of the following are always exist in the second trophic level of the food chain?

- (a) Plants.                      (b) Lions.                      (c) Rabbits.                      (d) Fungi.

10 If the atmospheric pressure at the top of the stratosphere is  $P_1$ , the atmospheric pressure at the top of the troposphere is  $P_2$ , and at the top of the mesosphere is  $P_3$ , which of the following relations is correct?

- (a)  $P_2 > P_1 > P_3$     (b)  $P_1 > P_2 > P_3$   
(c)  $P_3 > P_1 > P_2$     (d)  $P_3 > P_2 > P_1$

11 Polar winds are cold and ..... and they blow from areas with ..... atmospheric pressure around polar regions.

- (a) wet - low                      (b) dry - low                      (c) warm - high                      (d) dry - high

**12** What is the purpose of using renewable energy sources?

- (a) Reducing the use of fossil fuel.
- (b) Reducing daily energy consumption.
- (c) Increasing greenhouse gas emissions.
- (d) Increasing the frequency of extreme weather phenomena.

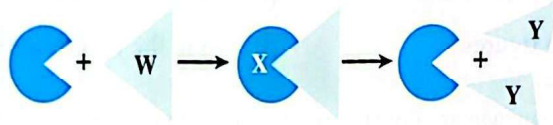
**13** The ratio of the area occupied by water to the area of land on the Earth's surface is equal to .....

- (a)  $\frac{3}{7}$
- (b)  $\frac{7}{10}$
- (c)  $\frac{3}{10}$
- (d)  $\frac{7}{3}$

**14** The ratio between the number of electrons of hydrogen atom to the number of electrons of oxygen atom which participate in the formation of single covalent bond in a water molecule .....

- (a) 1 : 1
- (b) 2 : 1
- (c) 1 : 2
- (d) 8 : 1

**15** The following figure illustrates the mechanism of the enzyme action:



What does each of (W), (X) and (Y) represent in this chemical reaction?

	Enzyme	Products	Substrate
(a)	W	X	Y
(b)	X	W	Y
(c)	X	Y	W
(d)	Y	W	X

**16** Which of the following organisms has/have breathing openings?

- (a) Dolphins.
- (b) Salmon.
- (c) Icefish.
- (d) Viperfish.

**17** The following are statements written by a student about the factors on which the density of a body substance depends:

- (I) The mass of the body.
- (II) The mass of the body molecules.
- (III) The volume of the body.
- (IV) The distances between its molecules (intermolecular spaces).

On which of these factors does the density of a body substance depend?

- (a) (I) and (III).
- (b) (II) and (IV).
- (c) (I) and (IV).
- (d) (II) and (III).

**18** The presence of a certain gas in abundance in a planet's atmosphere means that the effective velocity of the molecules of that gas compared to the escape velocity from the planet is .....

- (a) less (b) equal  
(c) slightly greater (d) much greater

**19** Which of the following gases, when inhaled, results in the formation of carboxyhaemoglobin in the blood?

- (a)  $\text{CO}_2$  (b)  $\text{NO}_2$  (c) CO (d)  $\text{SO}_3$

**20** Which of the following living organisms represent an example for adaptation to low temperatures?

- (a) Wood frog and thorny devil lizard.  
(b) Icefish and tilapia.  
(c) Wood frog and icefish.  
(d) Icefish and thorny devil lizard.

### Answer the following questions (21 & 22):

**21** What is meant by gas solubility? Identify the factors affecting it.

It is the ability of a gas to dissolve in a liquid.

Factors affecting it are temperature, pressure, and the nature of the gas and the liquid

**22** Mention a use of ultraviolet rays in:

- (a) The medical field.  
(b) The field of counterfeit banknotes.

Ultraviolet rays are used in medicine to disinfect equipment and kill microorganisms. They are also used to detect counterfeit banknotes, because special marks on real money glow under UV light.

## Exam 8



Answered

### Choose the correct answer (1 : 20):

**1** Which of the following are considered from the major elements in the formation of carbohydrates during the photosynthesis process?

- (a) Glucose and carbon dioxide. (b) Oxygen and glucose.  
(c) Carbon dioxide and water. (d) Water and oxygen.