Weekly Home Work
3rd Week

الإدارة المركزية للتعليم العام
إدارة تنمية مادة العلوم

2026

1st Secondary
First Term

Integrated Sciences

إعداد
سامح منصور

مراجعة
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Ch (1): Lesson (3) The physical properties of water

Question (1) Choose the correct answer:-

1) The density of water is 1g/cm^3 at a temperature of 4 °C. This means that:

A. The mass of 1 cm^3 of water is 1 Kg.
B. The mass of 1 cm^3 of water is 1 g.
C. The mass of 1 m^3 of water is 1 g.
D. The mass of 1 cm^3 of water is 1 L.

2) The maximum density of pure water at a temperature of …….

A. 0 °C **B.** 4 K **C.** 90 °C **D.** 277 K

3) The figure shows three cups of water of different salinities, at the same temperature. An egg is placed in each of them (and the eggs are completely identical). The arrangement of the water according to density is:

A. X = Y = Z
B. X > Y > Z
C. Z > Y > X
D. Z > Y = X

4) Which of the following cups contains the greatest density of water?

A. **B.** **C.** **D.**

5) Both volume of water and density of water change with temperature
What happens during each procedure described below?

0 °C ← 4 °C

	The water volume	The water density
A	increases	increases
B	decreases	decreases
C	decreases	increases
D	increases	decreases

4 °C ← 23 °C

	The water volume	The water density
A	increases	increases
B	decreases	decreases
C	decreases	increases
D	increases	decreases

0 °C → 8 °C

	The water volume	The water density
A	increases	decreases
B	decreases	increases
C	decreases then increases	increases then decreases
D	increases then decreases	decreases then increases

6) The density of water is 1g/cm^3 at a temperature of 4 °C. it is equivalent to…….

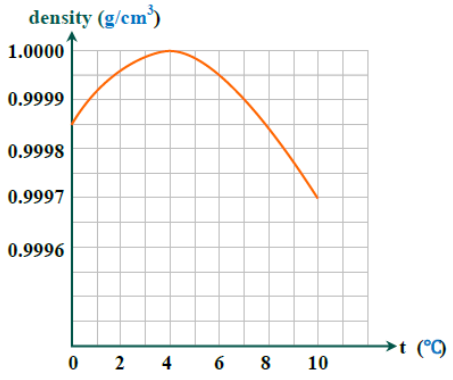
A. 0.001 kg/m^3
B. 1 kg/m^3
C. 4 kg/m^3
D. 1000 kg/m^3

7) The relative density of seawater is 1.025, this means that the density of seawater is equal to:

	In g/cm^3	In kg/m^3
A	1.025	1.025
B	1025	1025
C	1.025	1025
D	1025	1.025

8) From the graph, the density of water is 1g/cm^3 at a temperature of 4 °C, so the volume of 4 kg of water is equal to:

A. 0.004 m^3
B. 1 m^3
C. 4 m^3
D. 4000 m^3



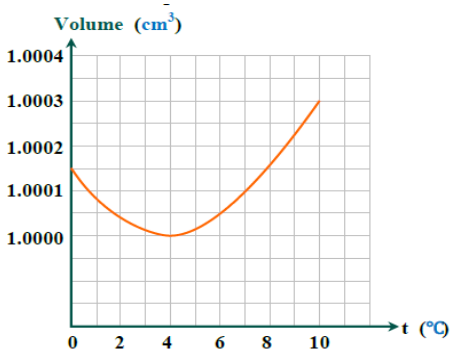
9) From the graph shown, we can conclude that:

A. The density of water increases when the temperature is raised above 4 °C

B. The density of water increases when the temperature is lowered below 4 °C

C. The volume of water increases when the temperature is lowered below 4 °C

D. The volume of water decreases when the temperature is lowered below 4 °C



10) A sample of water has a density of 1 g/cm^3. This sample is:

A. Distilled water at 23 °C

B. Distilled water at 8 °C

C. Distilled water at 4 °C

D. Distilled water at 0 °C

11) In the hydrometer scale:

A. The lower scale indicates zero

B. The upper scale indicates zero

C. The lower scale indicates the lowest density

D. The upper scale indicates the lowest density

12) In the hydrometer:

	The function of wide cavity	The function of mercury
A	Floating	vertical balance
B	Floating	Floating
C	vertical balance	Floating
D	vertical balance	vertical balance

13) In a hydrometer, the density of the liquid is very high when:

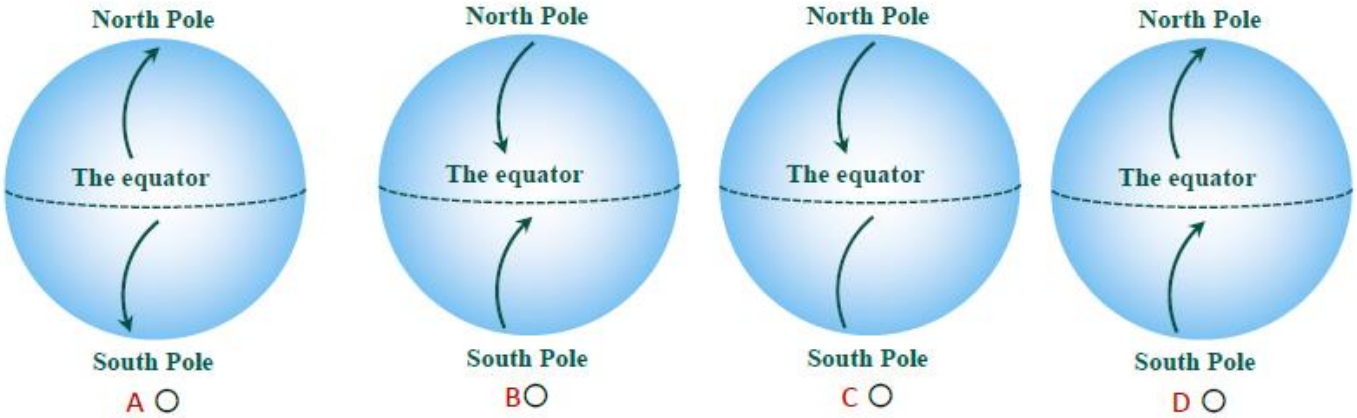
A. The volume of the immersed part of hydrometer in the liquid increases.

B. The volume of the immersed part of hydrometer in the liquid decreases.

C. The coefficient of adhesion of the liquid to the glass decreases.

D. The temperature of the liquid is high.

14) Which of the following diagrams has arrows drawn correctly to show the direction of heat and salt transfer by air currents?

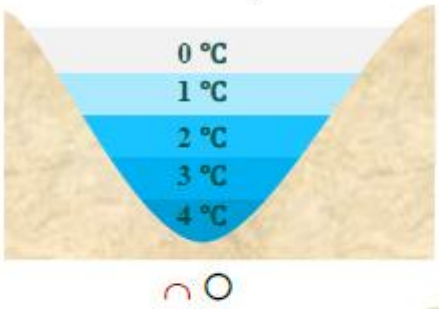


15) The direction in which ocean currents move

	Heat and salts	Nutrients
A	From the poles to the equator	From the ocean surface to the bottom
B	From the poles to the equator	From the bottom of the ocean to the surface
C	From the equator to the poles	From the bottom of the ocean to the surface
D	From the equator to the poles	From the ocean surface to the bottom

16) Which of the following diagrams correctly shows the temperatures of a lake in a polar region?

A.



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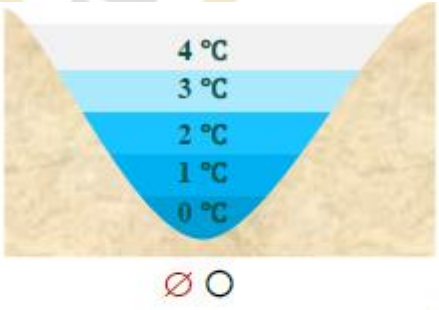


C.

D.

17) The average of kinetic energy of water molecules is the largest at …….

(a) Zero^0 C

(b) 50^0 C

(c) 80^0 C

(d) 100^0 C

18) Which of the following affects the specific heat of the substance?

(a) Its physical state

(b) Its mass

(c) Its volume

(d) Quantity of heat lost or gained

19) In ocean depths, where pressure is very high, how does the enormous increase in pressure affect the density of water in large depths compared to its density at the surface?

(a)The increase in pressure has no effect on density because water is completely incompressible.

(b)The density increases, but this effect is completely overcome by the decrease in temperature at the bottom.

(C)The density decreases because the high pressure breaks the hydrogen bonds.

(d) Density increases slightly due to the compression of water under pressure.

20) What is the fundamental relationship between increasing salinity and the density of liquid water at constant temperature and pressure?

(a) The density increases because adding salts increases the total mass per unit Volume.

(b) The density increases because the specific heat of the solution decreases.

(C) The density decreases because the dissolved ions introduce between water molecules and increase volume.

(d) The density remains constant because the mass of dissolved salts are compensated by a similar decrease in the volume of water.

21) Two objects are in contact, and thermal energy flows from Object (A) to Object (B). which of the following explains this state?

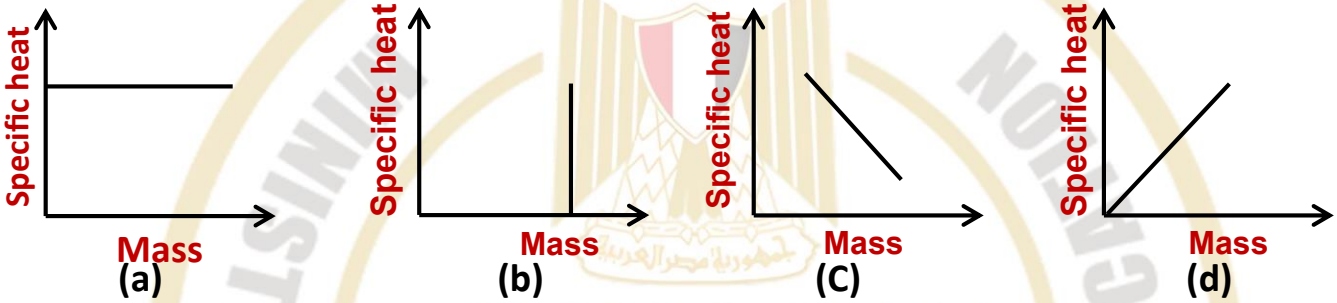
(a) Object (A) has a higher specific heat than object (B).

(b) The difference between their masses is the reason of energy transfer.

(C) Object (A) contains less total internal energy than object (B).

(d) Object (A) has a higher temperature than object (B).

22) Which of the following graphs represents the correct relation between mass Of substance and its specific heat…….



23) The following figure represents the change happened to three substances have equal masses and same initial temperatures are heated for an equal period of time by the same thermal source.

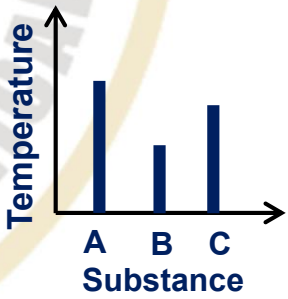
Which of the following is the correct order according to their specific heat?

(a) B < C < A

(b) A < C < B

(C) C < B < A

(d) A < B < C



24) Which group of organisms listed below are Poikilotherms (cold-blooded)?

(a) Birds and Mammals.

(b) Fish, Amphibians, and Reptiles.

(C) Humans and Whales.

(d) Only Arthropods.

25) The following table data shows the specific heat of a group of different substances W,X,Y,Z

Substance	Its specific heat capacity (J/Kg.°C) or (J/Kg.K)
W	450
X	385
Y	897
Z	130

When equal masses of these materials are given the same amount of heat,

Which material W,X,Y or Z have a higher change in its temperature?

a) Substance W **b) Substance X** **c) Substance Y** **d) Substance Z**

26) The absolute zero is equal to…….

a) 0 k **b) 273 k** **c) 0 °C** **d) 273 °C**

27) If you know that the normal human temperature is 37 °C, then on the Kelvin scale it is equivalent to .....

a) 37k **b) 273 k** **c) 300 k** **d) 310 k**

28) If you know that the specific heat of glass is 840J/ Kg.°C, it is equivalent to ……

a) 3.08 J/Kg.K

b) 567 J/Kg.K

c) 840 J/Kg.K

d) 1113 J/Kg.K

29) When the same amount of heat was given to four samples of equal mass but of different materials, the following was observed:

- The temperature of the sample W of material increases by20 °C
- The temperature of the sample X of material increases by 40 °C
- The temperature of the sample W of material increases by 60 K
- The temperature of the sample W of material increases by 80 K

Which material has the highest specific heat?

a) Substance W b) Substance X c) Substance Y d) Substance Z

Essay Questions

1) What is meant by a substance of 2 kg gains an amount of heat of 10000J and its temperature rises by 10 °C?

2) What are the factors affecting the amount of heat gained or lost by a substance for changing its temperature?

3) What is meant by:

1- The internal energy of the object equals 1000 Joules?

2- The specific heat of liquid water equals 4180 J/Kg.K?

3- The latent heat of vaporization

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Choose the correct answer:-

1) The density of water is equal to 1g/cm^3 at temperature 4 °C, when the temperature is raised to 8 °C the:

	The water volume	The water density
A	increases	increases
B	decreases	decreases
C	decreases	increases
D	increases	decreases

2) The density of water is equal to 1g/cm^3 at temperature 4 °C, then the mass of 4 m^3 of water is equal ……

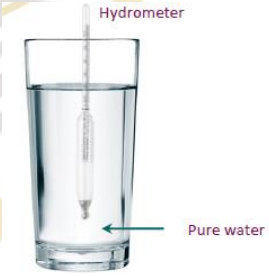
A. 0.004 kg
B. 1 kg
C. 4 kg
D. 4000 kg

3) Four samples of water each have a mass of 1 Kg, which one has a larger volume:

A. Saltwater at 4°C
B. Saltwater at 8°C
C. Fresh water at 4°C
D. Fresh water at 8°C

4) In the diagram shown, when a large amount of salt is dissolved in the pure water; the volume of the immersed part of the hydrometer in the water……

A. increases
B. decreases
C. doesn't change
D. cannot be determined



5) Which of the following devices is used to measure the density of liquids?

A. Hydrometer
B. Barometer
C. Manometer
D. Thermometer

6) In a hydrometer, which of the following materials can be used to help balance:

A. Mercury or lead balls.
B. Nickel or chromium.
C. Platinum or iridium.
D. Bronze or phosphorus.

7) Ocean currents transport

A. Heat from the poles to the tropics.
B. Nutrients from the ocean surface to the bottom.
C. Nutrients from the ocean bottom to the surface.
D. Salt from the poles to the tropics.

8) The system international measuring unit of the temperature is ……..

A. degree Celsius (°C)
B. degree Fahrenheit (°F)
C. Kelvin (K)
D. Rankine (°R)

9) The freezing point of pure water is ……..

A. – 273 °C
B. 273 °C
C. 0 K
D. 273 K

10) Which of the following physical quantities is considered as a measure of average kinetic energy of particles in a body?

a) The amount of heat gained or lost
b) Body temperature
c) Work done on the object
d) Mass of the body molecules

11) The following data table shows the change in temperature of equal masses of different materials (Δt) when each one gains the same amount of heat.

Substance	The change in its temperature at gaining the same amount of heat
W	5 °C
X	10 °C
Y	15 °C
Z	20 °C

Which substance W, X, Y or Z has the largest specific heat?

a) Substance W b) Substance X c) Substance Y d) Substance Z

12) Which of the following values on the kelvin scale is equivalent to 10 °C?

a) 263 k b) 273 k c) 283 k d) 303 k

13) A certain amount of a substance whose temperature rises from 30 °C to 310 k. then the change in temperature is……

a) 7 k b) 37 °C c) 280 k d) 280 °C

14) The amount of heat required to raise the temperature of 0.9 kg of copper by 70 °C equal…… (The specific heat of copper equal 385 J/Kg.K)

a) 2.43×10^4 J

b) 1.19×10^5J

c) 4.14×10^4 J

d) 2.03×10^5 J

15) Two equal masses from different metals (A) and (B) are heated by the same amount of heat; the temperature of (A) increased by 50^0C while the temperature of metal (B) increased by 150^0C. If the specific heat of (A) = 390 J/kg. ^{0}C, then the specific heat of (B) =.....

(a) 130 J/kg. ^{0}C

(b) 260 J/kg. ^{0}C

(C) 390 J/kg. ^{0}C

(d) 520 J/kg. ^{0}C

16) Which of the following statements most accurately represents the definition of heat (Q) accurately?

(a)The transfer of energy across a system boundary due to a temperature difference.

(b)The state of matter from hotness and coldness

(C)The average latent energy stored in the molecular bonds of a substance.

(d)The total thermal energy contained within a system's boundaries.

17) The concept "latent" refers to .....

(a) The heat is only absorbed when the substance is impure.

(b) The heat is hidden because it causes a significant change in pressure.

(C) The heat is absorbed or released without a change in temperature ($\Delta T=0$).

(d) The heat can only be measured using an indirect method

Essay Questions

Q1/ A quantity of pure water with a mass of 1 kg and a temperature of 8 °C.

What happens to its density in each of the following cases:-

First: Adding 1 kg of pure water at a temperature of 8 °C to it?

Second: Dissolving 34 g of table salt in it?

……

……

Q2/ Calculate the final temperature of the mixture formed from mixing 100 kg of water at 50°C with 250 kg of water at 50°C?

……

……

……

Q3/ A kettle holds 1.5 kg of liquid water at 50° C

-How much heat energy (Q) must be supplied to bring the water to its boiling point (100°C)? (Given : the specific heat of water = 4180 J/Kg.K)

……

……

……

Q4/ Give reason for each of the following:-

1-When a molten cake is taken out immediately from the oven, we perceive The chocolate to be much hotter than the cake.

……

……

2- Water causes a moderate climate in coastal areas in both winter and summer.

……

……

……

3- Farmers in cold areas spray fruit trees with water.

.....

.....

4- When two equivalent masses of aluminum and water are exposed to the same quantity of heat, the temperature of aluminum is raised more.

.....

.....

5- The time required for water is higher than that required for another substance with the same mass to increase their temperature by the same amount.

.....

.....

Q5/ Give reason for each of the following:-

The graph represents the relation between the temperature and the added energy to water starting from ice at -30°C until becoming vapor above 100°C. Identify the state of water (ice, liquid or vapor) at each of the stages A, B and C.