Central Administration for Curriculum Development

Science development office

Physics

Second Secondary Grade

2026

Home Work

Week 15

Name: .....

Class: .....

School: .....

إعـداد

عبد الله مصطفي – حسن أشرف

مراجعة

محمد عنتر – مجدي فتحي
عمرو مالي

مكتب مستشار العلوم

عبدالله مصطفى – سعيد محمد

إشراف

د/ عزيزة رجب خليفة
مستشار العلـــوم

إشراف عام

د/ هالـــة عبـــد السلام
رئيس الإدارة المركزية للتعليم العام

Chapter 6| Pressure Law and The General Gas Law

First: Multiple Choice Questions

1) A rigid container contains a quantity of dry oxygen gas. Its pressure is 72 cm Hg at a temperature of 7 °C. The pressure of the gas at 87 °C becomes equal to:

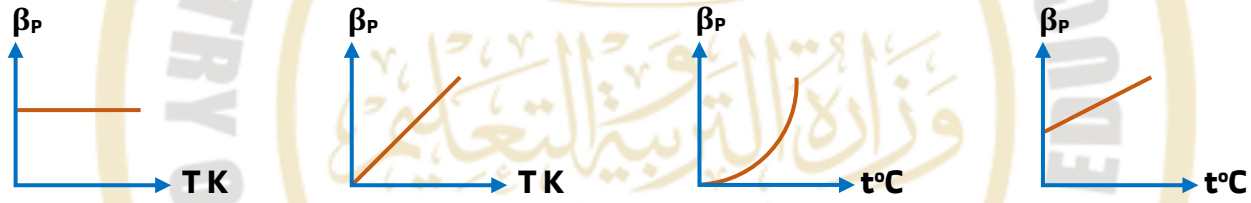
(A) 894.85 cm Hg

(B) 92.571 cm Hg

(C) 94.212 cm Hg

(D) 487.234 cm Hg

2) The graph that represents the relationship between the absolute temperature of a gas and the coefficient of increase of its pressure at constant volume is:



(D) (C) (B) (A)

3) The correct mathematical expression that relates the temperature of a fixed mass of gas on the Celsius scale to its pressure at constant volume is:

$\frac{P_1}{P_2} = \frac{1+\beta_P t_2}{1+\beta_P t_1}$ (D) $\frac{P_1}{P_2} = \frac{t_1}{t_2}$ (C) $\frac{P_1}{P_2} = \frac{1+\beta_P t_1}{1+\beta_P t_2}$ (B) $\frac{P_1}{P_2} = \frac{t_2}{t_1}$ (A)

4) A quantity of gas has a pressure P at a temperature t °C. When its temperature is raised to 121.5 °C, its pressure increases by 0.315 P. The value of t is equal to:

(A) 27 °C
(B) 300 °C
(C) 315 °C
(D) 327 °C

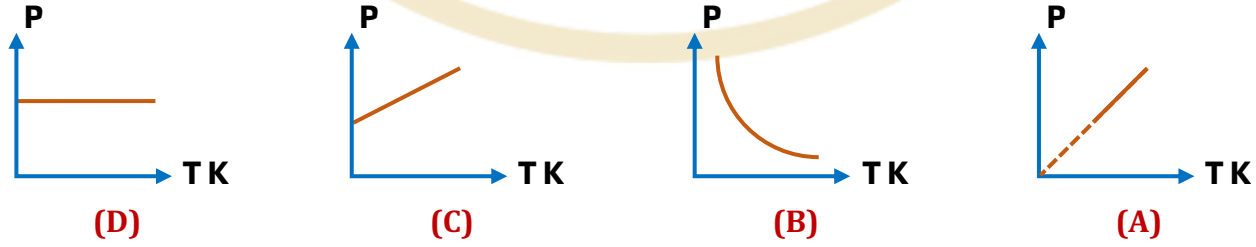
5) A quantity of gas is at standard temperature and pressure (S.T.P.). If its pressure becomes three times its initial pressure while its volume remains constant, then its absolute temperature:

(A) increases to four times
(B) decreases to quarter
(C) remains constant
(D) increases to three times

6) The pressure of a quantity of gas at a temperature T (K) is 40 mm Hg. If its temperature increases by 20%, its pressure becomes:

(A) 42 mm Hg
(B) 44 mm Hg
(C) 48 mm Hg
(D) 52 mm Hg

7) The correct graph that represents the relationship between the pressure of a fixed mass of gas and its temperature at constant volume is:



8) Two containers, one of volume 13 L containing hydrogen gas at a pressure of 21 cm Hg. The other of volume 14 L containing nitrogen gas at a pressure of 39 cm Hg are both initially at a temperature of 0 °C. The two containers are then connected, and the temperature of the system is increased to 87 °C. The final pressure of the gas mixture equals …..

(A) 20 cm Hg (B) 30 cm Hg

(C) 40 cm Hg (D) 50 cm Hg

Second: Essay Questions

9) A quantity of nitrogen gas occupying a volume of 100 m^3 at a temperature of 27 °C and a pressure of 15 atm is compressed to fill an empty container of volume 50 m^3. If the final temperature of the nitrogen gas is 17 °C, calculate the absolute pressure inside the container.

10) Two glass bulbs of volumes 500 cm^3 and 200 cm^3 respectively, are connected by a short capillary tube and sealed together at a pressure of 76 cm Hg and a temperature of 27 °C. Calculate the pressure of the trapped air when the larger bulb is heated to 127 °C, while the temperature of the smaller bulb remains at 27 °C.

- The end -

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Weekly Assessment

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Chapter 6| Pressure law and The General Gas law

Group (A)

First: Multiple Choice Questions

1) A container contains a confined gas at a pressure of 150 cm Hg and a temperature of 25 °C. If the pressure of the gas decreases to become equal to the atmospheric pressure, the percentage decrease in the temperature of the gas on the Kelvin scale equals ……..
(P_a = 76 cm Hg)
(A) 49.1%
(B) 49.5%
(C) 49.3%
(D) 49.7%

2) A gas has a pressure of 0.5 atm at a temperature of 35 °C. Its pressure at a temperature of 85 °C is equal to:
(A) 48.08 cm Hg
(B) 5.89×10^4 N/m^2
(C) 0.62 atm
(D) 440.8 mm Hg

3) A quantity of gas is at a temperature of 30 °C. Its pressure becomes double its initial value at a temperature of:
(A) 15 °C
(B) 60 °C
(C) 333 °C
(D) 606 °C

4) A mass of oxygen gas occupies a volume of 550 L at a temperature of 5 °C and under a pressure of 1.013×10^5 N/m^2. The volume at a temperature of 30 °C and under a pressure of 1.066×10^5 N/m^2 equals …….

(A) 450.23 L

(B) 562.4 L

(C) 569.66 L

(D) 652.2 L

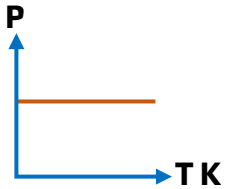
Second: Essay Questions

5) A quantity of gas has a pressure of 75 cm Hg at a temperature of 0 °C. Calculate its pressure at 91 °C, given that its volume remains constant.

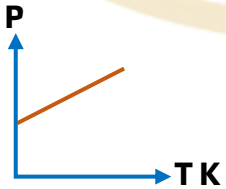
Group (B)

First: Multiple Choice Questions

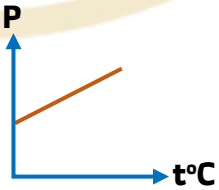
1) The correct graph that represents the relationship between the pressure of a fixed mass of gas and its temperature at constant volume is:



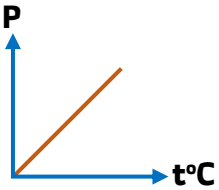
(D)



(C)



(B)



(A)

2) A steel tank contains carbon dioxide gas at a temperature of 0 °C and under a pressure of 1.2×10^6 Pa. The pressure of the gas when it is heated to 100 °C equals …….

(A) 1.6×10^5 Pa

(B) 2.3×10^6 Pa

(C) 1.64×10^6 Pa

(D) 1.6×10^4 Pa

3) A butane gas cylinder is designed to withstand a maximum pressure of 15 atm. If the pressure of the gas inside the cylinder is 2 atm at 50 °C, the minimum temperature at which the cylinder would burst, assuming the volume remains constant equals ……

(A) 130.75 °C

(B) 131 °C

(C) 403.75 °C

(D) 404 °C

4) 5 L of nitrogen gas at a temperature of 7 °C and a pressure of 70 cm Hg is mixed with 12 L of oxygen gas at a temperature of 27 °C and a pressure of 80 cm Hg. The gas mixture is then placed in a container of volume 20 L at a temperature of 127 °C. The pressure of the gas mixture equals ……

(A) 75 cm Hg

(B) 86 cm Hg

(C) 89 cm Hg

(D) 98.2 cm Hg

Second: Essay Questions

5) A quantity of gas occupies a volume of 550 L at a temperature of 5 °C and a pressure of 1 Pa. Calculate the volume of this gas at a temperature of 30 °C and a pressure of 5.065×10^5 Pa.

Group (C)

First: Multiple Choice Questions

1) A quantity of gas is enclosed in a sealed container at a temperature of 0 °C. When its temperature is increased by 100 °C, its pressure becomes double its initial value.
The coefficient of increase of pressure is equal to:

(A) 273 K^{-1}

(B) 0.00366 K^{-1}

(C) 373 K^{-1}

(D) 0.00268 K^{-1}

2) A quantity of gas is contained in a uniform cross-section vessel at a pressure of 5 atm and a temperature of t °C. If its temperature is increased by 10%, its pressure becomes:

(A) 4.45 atm

(B) 0.5 atm

(C) 5.5 atm

(D) 50 atm

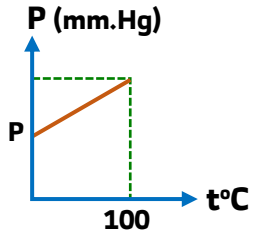
3) The opposite graph represents the relationship between the pressure of a quantity of gas and its Celsius temperature. According to the graph, the pressure of the gas at 100 °C is equal to:

(A) 0.52 P

(B) 0.64 P

(C) 0.73 P

(D) 1.36 P



4) Under standard temperature and pressure (S.T.P.), which of the following statements is correct?

(A) Pressure = 1 atm, temperature = 0 °C, and the molar volume of a gas = 22.4 L

(B) Pressure = 76 cm Hg, temperature = 273 K, and the molar volume of a gas = 22.4×10^{-3} m^3

(C) Pressure = 1 atm, temperature = −273 K, and the molar volume of a gas = 22.4 L

(D) Pressure = 0.76 m Hg, temperature = 273 K, and the molar volume of a gas = 22.4×10^{-3} m^3

Second: Essay Questions

5) A thin-walled glass bulb contains a gas at a temperature of −23 °C, and the pressure of the gas inside it is 75 cm Hg. Determine the maximum temperature to which the bulb can be heated without bursting, given that the maximum pressure the walls can withstand is 117 cm Hg.

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– The end –