Heat - مراجعة الميدتيرم

جزء هم لـ امتحان الميدتيرم

Sheet [1]

Midterm -

- MCQ

- Revision

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1. If it is given that 546 K equals 273°C, then it follows that 400 K equals:

a. 127°C. b. 150°C. c. 473°C. d. 1 200°C

2. A substance is heated from 15°C to 35°C. What would the same incremental change be when registered in kelvins?

a. 20 b. 40 c. 36 d. 313

3. A steel wire, 150 m long at 10°C, has a coefficient of linear expansion of 11×10^{-6}/C°. Give its change in length as the temperature changes from 10°C to 45°C.

a. 0.65 cm b. 1.8 cm c. 5.8 cm d. 12 cm

4. An automobile gas tank is filled to its capacity of 15.00 gallons with the gasoline at an initial temperature of 10°C. The automobile is parked in the sun causing the gasoline's temperature to rise to 60°C. If the coefficient of volume expansion for gasoline is 9.6×10^{-4}/C°, what volume runs out the overflow tube? Assume the change in volume of the tank is negligible.

a. 1.74 gallons b. 1.18 gallons c. 0.72 gallons d. 0.30 gallons

5. The coefficient of area expansion is:

a. half the coefficient of volume expansion.

b. three halves the coefficient of volume expansion.

c. double the coefficient of linear expansion.

d. triple the coefficient of linear expansion

6. The force of attraction and repulsion between the gas molecules

(a) very large (b) very small (c) does not exist

7. Which best expresses the value for the coefficient of volume expansion, γ, for given material as a function of its corresponding coefficient of linear expansion, α?

a. $\gamma = \alpha^3$ b. $\gamma = 3\alpha$ c. $\gamma = \alpha^2$ d. $\gamma = 2\alpha$

8. Complete the following statement: The transfer of heat by *convection* will occur

(a) only in metals. (b) only in the presence of a liquid or a gas.
(c) with or without the presence of matter.

9. The two ends of an iron rod are maintained at different temperatures. The amount of heat that flows through the rod by conduction during a given time interval does *not* depend upon

(a) the length of the iron rod. (b) the mass of the iron rod.

(c) the thermal conductivity of iron.

(d) the temperature difference between the ends of the rod.

10. At what rate is heat lost through a 1.0 m × 1.5 m rectangular glass windowpane that is 0.5 cm thick when the inside temperature is 20 °C and the outside temperature is 5 °C? The thermal conductivity for glass is 0.80 W/(m · C°).

(a) 18 W (b) 3600 W (c) 36 W (d) 720 W

11. The size of the gas molecules compared the spacing are:

(a) Larger. (b) very small. (c) equal.

12. A temperature change from 15°C to 35°C corresponds to what incremental change in °F?

a. 20 b. 40 c. 36 d. 313

13. A rectangular steel plate with dimensions of 30 cm × 25 cm is heated from 20°C to 220°C. What is its change in area? (Coefficient of linear expansion for steel is 11×10^{-6}/C°.)

a. 0.82 cm^2 b. 1.65 cm^2 c. 3.3 cm^2 d. 6.6 cm^2

14. An automobile gas tank is filled to its capacity of 15.00 gallons with the gasoline at an initial temperature of 10°C. The automobile is parked in the sun causing the gasoline's temperature to rise to 60°C. If the coefficient of volume expansion for gasoline is $9.6 \times 10^{-4}/C°$, what volume runs out the overflow tube? Assume the change in volume of the tank is negligible.

a. 1.74 gallons
b. 1.18 gallons
c. 0.72 gallons
d. 0.30 gallons

15. The force of attraction and repulsion between the gas molecules

(a) very large (b) very small (c) does not exist

16. A cabin has a 0.159-m thick wooden floor [$k = 0.141$ W/(m · C°)] with an area of 13.4 m^2. A roaring fire keeps the interior of the cabin at a comfortable 18.0 °C while the air temperature in the crawl space below the cabin is −20.6 °C. What is the rate of heat conduction through the wooden floor?

(a) 31 J/s (b) 138 J/s (c) 459 J/s (d) 245 J/s

17. Normal body temperature for humans is 37 °C. What is this temperature in kelvins?

a. 296 b. 310 c. 393 d. 273

18. Which best expresses the value for the coefficient of volume expansion, γ, for given material as a function of its corresponding coefficient of linear expansion, α?

a. $\gamma = \alpha^3$ b. $\gamma = 3\alpha$ c. $\gamma = \alpha^2$ d. $\gamma = 2\alpha$

19. A material has a coefficient of volume expansion of $60 \times 10^{-6}/°C$. What is its area coefficient of expansion?

a. $120 \times 10^{-6}/°C$
b. $40 \times 10^{-6}/°C$
c. $20 \times 10^{-6}/°C$
d. $180 \times 10^{-6}/°C$

20. Which one of the following statements best explains why convection does not occur in solids?

(a) Molecules in a solid are more closely spaced than in a gas.

(b) The molecules in a solid are not free to move throughout the volume of the solid.

(c) Molecules in a solid vibrate at a lower frequency than those in a liquid.

(d) Solids are more compressible than liquids.

21. The two ends of an iron rod are maintained at different temperatures. The amount of heat that flows through the rod by conduction during a given time interval does *not* depend upon

(a) the length of the iron rod. (b) the mass of the iron rod.

(c) the thermal conductivity of iron.

(d) the duration of the time interval.

(c) the temperature difference between the ends of the rod.

22. The size of the gas molecules compared the spacing are:

(a) Larger. (b) very small. (c) equal.

23. The coefficient of area expansion is:

a. half the coefficient of volume expansion.

b. three halves the coefficient of volume expansion.

c. double the coefficient of linear expansion.

d. triple the coefficient of linear expansion

24. Normal body temperature for humans is 37°C. What is this temperature in kelvins?

a. 296 b. 310 c. 393 d. 273

25. Which best expresses the value for the coefficient of volume expansion, γ, for given material as a function of its corresponding coefficient of linear expansion, α?

a. $\gamma = \alpha^3$ b. $\gamma = 3\alpha$ c. $\gamma = \alpha^2$ d. $\gamma = 2\alpha$

1	A	19	B
2	A	20	B
3	C	21	B
4	C	22	B
5	C	23	C
6	C	24	B
7	B	25	B
8	B	26	B
9	B	27	B
10	B		
11	B		
12	C		
13	C		
14	C		
15	C		
16	C		
17	B		
18	B		