

## Examrace

# Competitive Exams: Physics MCQs (Practice\_Test 1 of 35)

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1. The Fahrenheit and the Centigrade scales have the same numerical value at a temperature of
  - a. -30 degrees
  - b. -40 degrees
  - c. -100degrees
  - d. -273degrees
2. van der Waals'equation of state of a gas takes into account
  - a. the intermolecular forces only
  - b. the size of the molecule only
  - c. both the intermolecular forces and the size of the molecule
  - d. the velocity of the molecules only
3. The First Law of Thermodynamics,  $U = ? Q - ? W$  indicates that when a system goes from its initial state to a final state
  - a. ? U is the same for the every path
  - b. ? Q is the same for every path
  - c. ? W is the same for every path
  - d. ? U and? Q are the same for every path
4. Which one of the following properties of a body remains constant during a reversible adiabatic process?
  - a. Enthalpy
  - b. Temperature
  - c. Specific heat
  - d. Entropy
5. A heat engine work on a Carnot cycle with the heat sink at a temperature of 27 degrees C. If the efficiency is 20%, then the temperature (in Kelvin) of the heat source will be

- a. 375 degrees
  - b. 300 degrees
  - c. 270 degrees
  - d. 150 degrees
6. Which one of the following figures correctly represents the temperature (T) -entropy (S) diagram (T in absolute scale) of a Carnot cycle?
- a. A
  - b. B
  - c. C
  - d. D
7. Given that  $H$  = the enthalpy of a system  $T$  = absolute temperature and  $S$  = entropy  $G = H - TS$  is the Gibbs function for the system. In the case of a reversible, isothermal, isobaric process
- a.  $G = \text{constant}$
  - b.  $G > 0$  and changes with  $T$
  - c.  $G < 0$  and changes with  $S$
  - d.  $G$  changes with both  $T$  and  $S$
8. Maxwell's law of distribution of velocities shows that
- a. all particles have the same velocity
  - b. all velocities are equally probable
  - c. the particles have varying energies depending on their speeds
  - d. all particles have the same energy but different velocities
9. A molecular is at temperature  $T$  (in Kelvin). According to the theorem of equi-partition of energy, the energy associated with each degree of freedom is
- a.  $\frac{1}{3} KBT$
  - b.  $\frac{1}{2} KBT$
  - c.  $KBT$
  - d.  $\frac{3}{2} KBT$
10. If the temperature of a black body is increased, then the maximum of the spectrum will

- a. shift towards shorter wavelength
  - b. shift towards shorter frequency
  - c. shift towards the shorter or longer wavelength depending on the nature of the black body
  - d. not shift
11. If two particles of same mass having charges  $+q$  and  $+9q$ , are allowed to fall from rest through the same electric potential difference, then their speeds will be in the ratio of
- a. 3: 1
  - b. 1: 3
  - c. 1: 9
  - d. 9: 1
12. In the circuit shown in the above figure, the charge on capacitor  $C_3$  will be
- a. 1.7 m coulomb
  - b. 1.5 m coulomb
  - c. 2.5 m coulomb
  - d. 5 m coulomb
13. Liquid dielectrics having polar molecules, such as water, always have dielectric constants that
- a. increase with decreasing temperature
  - b. increase with increasing temperature
  - c. decrease with decreasing temperature
  - d. are independent of temperature
14. A parallel plate capacitor is connected to a battery. Consider the following statements in this regard: If a metal sheet of negligible thickness is placed parallel to the plates of the capacitor
- a. the battery will supply more charge
  - b. the capacitance will increase
  - c. the potential difference between the plates will increase
  - d. equal and opposite charges will appear on the two faces of the metal plate

Which of the above statement (s) is/are correct?

- a. 1 alone
- b. 4 alone
- c. 1 and 2
- d. 2 and 3

## Frequently Asked Questions (FAQs)

### Solved questions and answers

( - ir...@ on 07-Apr-2017)

*1 Answer*

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