

CITY COLLEGE
B.SC Semester 1 Internal Assessment (online), under CU 2020-21

CHEMISTRY- HONOURS

Paper: CEMA-CC-1-2

(Physical Chemistry-1)

Full Marks – 10

Attempt all the questions.

1. The rms speed of an ideal gas moving in a plane is –
 - a) $(2k_B T/m)^{1/2}$
 - b) $(3k_B T/m)^{1/2}$
 - c) $(8k_B T/m\pi)^{1/2}$
 - d) zero
2. At high temperature, the molar heat capacity ($C_{p,m}$) at constant pressure for a nonlinear triatomic perfect gas is
 - a) $6R$
 - b) $7R$
 - c) $6.5R$
 - d) $7.5R$
3. If a gas follows Berthelot's equation of state, then the Boyle temperature for that gas is
 - a) a/bR
 - b) $(a/bR)^{1/2}$
 - c) $(a/bR)^{2/3}$
 - d) None of the above
4. If a gas (one mole) obeys $P(V-b) = RT$, then
 - a) Always $Z > 1$
 - b) Always $Z < 1$
 - c) At low pressure $Z < 1$
 - d) Always $Z = 1$

Z is the compressibility factor of the gas

5. Which of the following statement is true for an ideal gas
 - a) Mean free path $\propto T$ (if p is constant)
 - b) Mean free path $\propto 1/p$ (if T is constant)
 - c) Mean free path $\propto p$ (if T is constant)
 - d) Both a and b

