

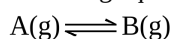
JEE MAIN EQUILIBRIUM — NUMERICAL ON EQUILIBRIUM CONCENTRATIONS — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ) — 3 questions

- Q.1** One mole each of He and A(g) are taken in a 10 L closed flask and heated to 400 K to establish the following equilibrium.



K_c for this reaction at 400 K is 4.0. The partial pressures (in atm) of He and B(g) are respectively (at equilibrium)

(Assume He, A(g) and B(g) behave as ideal gases)
(Given : $R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$)

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) 3.28, 2.624 (2) 2.624, 3.28
(3) 3.28, 0.656 (4) 0.656, 6.56

Scan or tap for the
full solution



- Q.2** Observe the following equilibrium in a 1 L flask.
 $A(g) \rightleftharpoons B(g)$

At T(K), the equilibrium concentrations of A and B are 0.5 M and 0.375 M respectively. 0.1 moles of A is added into the flask and heated to T(K) to establish the equilibrium again. The new equilibrium concentrations (in M) of A and B are respectively

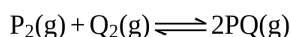
[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) 0.742, 0.557 (2) 0.367, 0.275
(3) 0.53, 0.4 (4) 0.557, 0.418

Scan or tap for the
full solution



- Q.3** Consider the following gaseous equilibrium in a closed container of volume 'V' at T(K).



2 moles each of $P_2(g)$, $Q_2(g)$ and $PQ(g)$ are present at equilibrium. Now one mole each of ' P_2 ' and ' Q_2 ' are added to the equilibrium keeping the temperature at T(K). The number of moles of P_2 , Q_2 and PQ at the new equilibrium, respectively, are

[JEE Main 2026 (Online) 24th January Evening Shift]

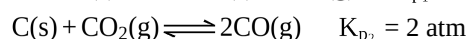
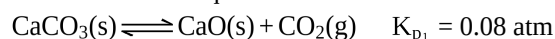
- (1) 2.56, 1.62, 2.24 (2) 2.67, 2.67, 2.67
(3) 1.21, 2.24, 1.56 (4) 1.66, 1.66, 1.66

Scan or tap for the
full solution



Section B (Numerical) — 3 questions

- Q.4** Solid carbon, CaO and $CaCO_3$ are mixed and allowed to attain equilibrium at T K.



The partial pressure of CO is _____ $\times 10^{-1}$ atm

[JEE Main 2026 (Online) 8th April Evening Shift]

Scan or tap for the
full solution



- Q.5** $X_2(g) + Y_2(g) \rightleftharpoons 2Z(g)$

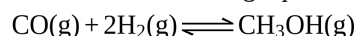
$X_2(g)$ and $Y_2(g)$ are added to a 1 L flask and it is found that the system attains the above equilibrium at T(K) with the number of moles of $X_2(g)$, $Y_2(g)$ and $Z(g)$ being 3, 3 and 9 mol respectively (equilibrium moles). Under this condition of equilibrium, 10 mol of $Z(g)$ is added to the flask and the temperature is maintained at T(K). Then the number of moles of $Z(g)$ in the flask when the new equilibrium is established is _____. (Nearest integer)

[JEE Main 2026 (Online) 23rd January Evening Shift]

Scan or tap for the
full solution



- Q.6** Consider the following equilibrium,



0.1 mol of CO along with a catalyst is present in a 2 dm³ flask maintained at 500 K. Hydrogen is introduced into the flask until the pressure is 5 bar and 0.04 mol of CH_3OH is formed. The $K_p^\ominus$ is _____ $\times 10^{-3}$ (nearest integer).

Given : $R = 0.08 \text{ dm}^3 \text{ bar K}^{-1} \text{ mol}^{-1}$

Assume only methanol is formed as the product and the system follows ideal gas behaviour.

[JEE Main 2025 (Online) 2nd April Morning Shift]

Scan or tap for the
full solution



ANSWER KEY**Section A (MCQ) — 3 questions**

Ques.	1	2	3								
Ans.	1	4	2								

Section B (Numerical) — 3 questions

Ques.	4	5	6								
Ans.	4	15	74								