

1

- D (3)
- C (4)
- C (5)
- B (6)
- A (7)
- C (8)
- B (9)
- D (10)
- B (11)
- D (12)
- A (13)
- C (14)
- D (15)
- C (16)
- A (17)
- D (18)

(19) عندما يزداد لصفته ثلاثه أضعاف ينقص الحجم ذلك لثلاثه وتزداد لتركيز ثلاثه أضعاف

$$v = k [A]^2 [B]$$

$$v' = k (3[A])^2 (3[B])$$

$$v' = 27 k [A]^2 [B] = 27 v$$

تزداد سرعة 27 مرة الجواب (C)

C (20)

$$v = k [SO_2]^2 [O_2] \quad (21)$$

عندما يزداد لصفته ذلك لضعف ينقص الحجم ذلك لضعف وتزداد لتركيز ذلك لضعف

$$v' = k [(2[SO_2])^2 (2[O_2])]$$

$$v' = 8 k [SO_2]^2 [O_2] = 8 v$$

الجواب (B)

380-33776
 011-4444444
 011-4444444
 011-4444444

حل البنك المؤتمت لبحث سرعة التفاعل الكيميائي

سهم الطاب لمبتدئ

- C (1)
- D (2)
- B (3)
- A (4)
- C (5)
- D (6)
- B (7)
- D (8)
- C (9)
- D (10)
- B (11)
- D (12)
- D (13)
- B (14)
- D (15)
- D (16)
- B (17)
- A (18)
- D (19)
- D (20)
- B (21)
- C (22)

سهم الطاب المتوسط

$$v = k [A] [B]^2 \quad (1)$$

عندما يزداد لصفته ذلك لضعف ينقص الحجم ذلك لضعف وتزداد لتركيز ذلك لضعف

$$v' = k (2[A]) (2[B])^2$$

$$v' = 8 k [A] [B]^2 = 8 v$$

تزداد سرعة ثمانية مرات الجواب (D)

$$v = k [A]^2 [B]^3 \quad (2)$$

$$v' = k (2[A])^2 \left(\frac{[B]}{2}\right)^3$$

$$v' = \frac{1}{2} k [A]^2 [B]^3 = \frac{1}{2} v$$

الجواب (D)

$$\Rightarrow v_{avg_{(C)}} = 0.05 \times 82 \times 10^{-6}$$

$$= 4.1 \times 10^{-6} \text{ mol.l}^{-1}.s^{-1}$$

الجواب (C)

$$v_{avg_{(A)}} = \frac{3}{2} v_{avg_{(C)}}$$

$$= \frac{3}{2} \times 0.12 = 0.18$$

mol.l⁻¹.s⁻¹

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$$\frac{\Delta[B]}{\Delta t} = \frac{[B_2] - [B_1]}{\Delta t}$$

$$= \frac{(\frac{1.4}{2}) - (\frac{0.92}{2})}{(30 - 20)} = \frac{0.7 - 0.46}{10}$$

$$= 24 \times 10^{-3} \text{ mol.l}^{-1}.s^{-1} \quad (A)$$

$$v = k [A]^x [B]^y$$

$$\frac{4 \times 10^{-5}}{4 \times 10^{-5}} = \frac{k (0.2)^x (0.2)^y}{k (0.2)^x (0.4)^y}$$

$$1 = (\frac{1}{2})^y \Rightarrow y = 0$$

$$\frac{4 \times 10^{-5}}{16 \times 10^{-5}} = \frac{k (0.2)^x (0.2)^y}{k (0.4)^x (0.2)^y}$$

$$\frac{1}{4} = (\frac{1}{2})^x \Rightarrow x = 2$$

الرتبة الثانية
حيث k:

$$\Rightarrow v = k [A]^2$$

$$4 \times 10^{-5} = k (0.2)^2 \Rightarrow$$

$$k = \frac{4 \times 10^{-5}}{4 \times 10^{-2}} = 10^{-3}$$

الجواب (C)

$$v = k [A]^2 [B] \quad (22)$$

$$v' = k (3[A])^2 (\frac{[B]}{2})$$

$$v' = \frac{9}{2} k [A]^2 [B] = 4.5 v$$

الجواب (B)

$$v = k [A]^2 [B] \quad (23)$$

$$v' = k (2[A])^2 [B]$$

$$v' = 4 k [A]^2 [B] = 4 v$$

الجواب (B)

$$v = k [A]^2 \quad (24)$$

عندما يزداد التركيز ذلك لنصف يتوقف الحجم
ذلك لنصف ويزداد التركيز ذلك لنصف

$$v' = k (2[A])^2 = 4 k [A]^2$$

$$v' = 4 v \quad (A)$$

$$v = k [A]^2 [B] \quad (25)$$

$$v' = k (2[A])^2 (\frac{[B]}{2})$$

$$v' = 2 k [A]^2 [B] = 2 v$$

C (26)

مستم الطالب جيد

$$v_{avg_{(C)}} = 0.05 v_{avg_{(A)}} \quad (1)$$

$$v_{avg_{(A)}} = - \frac{\Delta[A]}{\Delta t} = - \frac{0.0036 - 0.02}{200}$$

$$= 82 \times 10^{-6} \text{ mol.l}^{-1}.s^{-1}$$

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$$\frac{1.2 \times 10^{-3}}{2.4 \times 10^{-3}} = \frac{k(0.1)^x (0.1)^y}{k(0.2)^x (0.1)^y}$$

$$\frac{1}{2} = \left(\frac{1}{2}\right)^x \Rightarrow x = 1$$

$$\Rightarrow v = k[A][B]^2 \quad \text{الرتبة الثالث}$$

حساب k:

$$1.2 \times 10^{-3} = k(0.1)(0.1)^2$$

$$k = \frac{1.2 \times 10^{-3}}{10^{-3}} = 1.2$$

حساب سرعة:

$$v = k[A][B]^2$$

$$= 1.2(0.5)(0.4)^2 = 96 \times 10^{-3}$$

mol.L⁻¹.s⁻¹ الجواب (B)

$$v_{avg(B)} = \frac{2}{3} v_{avg(A)} \quad (10)$$

$$v_{avg(A)} = -\frac{\Delta[A]}{\Delta t} = -\frac{0.002 - 0.02}{200}$$

$$= 9 \times 10^{-5} \text{ mol.L}^{-1} \cdot \text{s}^{-1}$$

$$\Rightarrow v_{avg(B)} = \frac{2}{3} \times 9 \times 10^{-5}$$

$$= 6 \times 10^{-5} \text{ mol.L}^{-1} \cdot \text{s}^{-1} \quad \text{الجواب (B)}$$

$$v = k[A]^x[B]^y \quad (11)$$

$$\frac{1.35 \times 10^{-3}}{5.4 \times 10^{-3}} = \frac{k(0.1)^x (0.1)^y}{k(0.1)^x (0.2)^y}$$

$$\frac{1}{4} = \left(\frac{1}{2}\right)^y \Rightarrow y = 2$$

$$\frac{1.35 \times 10^{-3}}{10.8 \times 10^{-3}} = \frac{k(0.1)^x (0.1)^2}{k(0.2)^x (0.2)^2}$$

$$v = k[A]^x$$

$$\frac{2 \times 10^{-3}}{8 \times 10^{-3}} = \frac{k(0.1)^x}{k(0.4)^x} \Rightarrow$$

$$\frac{1}{4} = \left(\frac{1}{4}\right)^x \Rightarrow x = 1$$

$$\Rightarrow v = k[A] \quad \text{الرتبة الأولى}$$

حساب k:

$$2 \times 10^{-3} = k(0.1)$$

$$k = \frac{2 \times 10^{-3}}{10^{-1}} = 2 \times 10^{-2}$$

الجواب (0)

$$v_{avg(B)} = 2 v_{avg(A)} \quad (7)$$

$$v_{avg(A)} = -\frac{\Delta[A]}{\Delta t} = -\frac{1.52 - 1.82}{60 - 20}$$

$$= 75 \times 10^{-4} \text{ mol.L}^{-1} \cdot \text{s}^{-1}$$

$$\Rightarrow v_{avg(B)} = 2 \times 75 \times 10^{-4}$$

$$= 15 \times 10^{-3} \text{ mol.L}^{-1} \cdot \text{s}^{-1}$$

الجواب (B)

$$v_{avg(A)} = -\frac{\Delta[A]}{\Delta t} = -\frac{1.66 - 1.82}{40 - 20} \quad (8)$$

$$= 8 \times 10^{-3} \text{ mol.L}^{-1} \cdot \text{s}^{-1} \quad (5)$$

$$v = k[A]^x[B]^y \quad (9)$$

$$\frac{1.2 \times 10^{-3}}{4.8 \times 10^{-3}} = \frac{k(0.1)^x (0.1)^y}{k(0.1)^x (0.2)^y}$$

$$\frac{1}{4} = \left(\frac{1}{2}\right)^y \Rightarrow y = 2$$

$$v = k [H_2O_2]^x \quad (13)$$

$$\frac{2 \times 10^{-2}}{4 \times 10^{-2}} = \frac{k (0.1)^x}{k (0.2)^x}$$

$$\frac{1}{2} = \left(\frac{1}{2}\right)^x \Rightarrow x = 1 \Rightarrow$$

$$v = k [H_2O_2] \quad \text{الرتبة الأولى}$$

$$2 \times 10^{-2} = k (0.1) \quad \text{حساب } k$$

$$k = \frac{2 \times 10^{-2}}{10^{-1}} = 0.2 \quad \text{الجواب (B)}$$

قسم بطابق المتغيرات

(1) حسب التوازن بعد المزج

$$n_A = n'_A$$

$$C \times V = C' \times V'$$

$$5 \times 200 = C' \times 500 \Rightarrow$$

$$C' = \frac{5 \times 200}{500} = 2 \text{ mol.l}^{-1} = [A]$$

بعد المزج

$$n_B = n'_B$$

$$C \times V = C' \times V'$$

$$2 \times 300 = C' \times 500 \Rightarrow$$

$$C' = \frac{2 \times 300}{500} = 1.2 \text{ mol.l}^{-1} = [B]$$

$$v = k [A]^2 [B]$$

$$= 5 \times 10^{-2} (2)^2 (1.2)$$

$$= 0.24 \text{ mol.l}^{-1}.s^{-1} \quad \text{الجواب (B)}$$

$$\frac{1}{8} = \left(\frac{1}{2}\right)^x \left(\frac{1}{2}\right)^y$$

$$\frac{1}{8} = \left(\frac{1}{2}\right)^x \left(\frac{1}{2}\right)^2 \Rightarrow \frac{1}{8} = \left(\frac{1}{2}\right)^{x+2}$$

$$\frac{1}{2} = \left(\frac{1}{2}\right)^x \Rightarrow x = 1 \Rightarrow$$

$$v = k [A][B]^2 \quad \text{الرتبة الثالثة}$$

حساب k

$$1.35 \times 10^{-3} = k (0.1)(0.1)^2$$

$$\Rightarrow k = \frac{1.35 \times 10^{-3}}{10^{-3}} = 1.35$$

حساب v

$$v = k [A][B]^2$$

$$= 1.35 (0.05)(0.1)^2$$

$$= 67.5 \times 10^{-5} \text{ mol.l}^{-1}.s^{-1} \quad \text{الجواب (B)}$$

$$v = k [A]^x [B]^y \quad (12)$$

$$\frac{16 \times 10^{-5}}{32 \times 10^{-5}} = \frac{k (0.2)^x (0.2)^y}{k (0.2)^x (0.4)^y}$$

$$\frac{1}{2} = \left(\frac{1}{2}\right)^y \Rightarrow y = 1$$

$$\frac{16 \times 10^{-5}}{128 \times 10^{-5}} = \frac{k (0.2)^x (0.2)^y}{k (0.4)^x (0.2)^y}$$

$$\frac{1}{8} = \left(\frac{1}{2}\right)^x \Rightarrow x = 3$$

$$\Rightarrow v = k [A]^3 [B] \quad \text{الرتبة الرابعة}$$

حساب k

$$16 \times 10^{-5} = k (0.2)^3 (0.2)$$

$$k = \frac{16 \times 10^{-5}}{(0.2)^3 (0.2)} = 0.1$$

الجواب (D)

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كل 2 mol.L^{-1} من المادة A يتناقص منها $2x$ كل 100 s

$$2x = \frac{2 \times 10}{100} = 0.2$$

$$\Rightarrow x = 0.1 \text{ mol.L}^{-1}$$

بعد زمن:

$$[A] = 2 - 2x = 2 - 0.2 = 1.8 \text{ mol.L}^{-1}$$

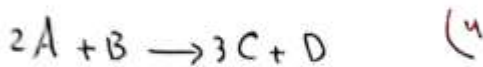
$$[B] = 1.2 - x = 1.2 - 0.1 = 1.1 \text{ mol.L}^{-1}$$

$$v = k[A]^2[B]$$

$$v = 5 \times 10^{-2} (1.8)^2 (1.1)$$

$$v = 17.82 \times 10^{-2} \text{ mol.L}^{-1} \cdot \text{s}^{-1}$$

الجواب (C)



$$2 \quad 1.2 \quad 0 \quad 0$$

$$2 - 2x \quad 1.2 - x \quad +3x \quad x$$

بعد زمن:

$$[B] = 1.2 - x = 1.2 - 0.7 = 0.5 \text{ mol.L}^{-1}$$

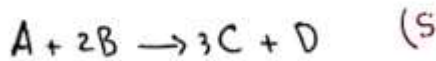
$$[A] = 2 - 2x = 2 - 1.4 = 0.6 \text{ mol.L}^{-1}$$

$$v = k[A]^2[B]$$

$$= 5 \times 10^{-2} \times (0.6)(0.6)(0.5)$$

$$= 0.009 \text{ mol.L}^{-1} \cdot \text{s}^{-1}$$

الجواب (D)



$$1.4 \quad 2.2 \quad 0 \quad 0$$

$$1.4 - x \quad 2.2 - 2x \quad 3x \quad x$$

(2) حسب التوازن بعد المزج:

$$n_A = n'_A$$

$$C \times v = C' \times v'$$

$$5 \times 600 = C' \times 1000 \Rightarrow$$

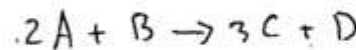
$$C' = \frac{5 \times 600}{1000} = 3 \text{ mol.L}^{-1} = [A]$$

$$n_B = n'_B$$

$$C \times v = C' \times v'$$

$$3 \times 400 = C' \times 1000 \Rightarrow$$

$$C' = \frac{3 \times 400}{1000} = 1.2 \text{ mol.L}^{-1} = [B]$$



$$3 \quad 1.2 \quad 0 \quad 0$$

$$3 - 2x \quad 1.2 - x \quad +3x \quad +x$$

$$[C] = 3x = 0.6 \Rightarrow x = 0.2 \text{ mol.L}^{-1}$$

$$[A] = 3 - 2x = 3 - 0.4 = 2.6 \text{ mol.L}^{-1}$$

$$[B] = 1.2 - x = 1.2 - 0.2 = 1 \text{ mol.L}^{-1}$$

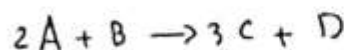
$$v = k[A]^2[B]$$

$$= 0.02 (2.6)^2 (1) = 13.52 \times 10^{-2}$$

$$\text{mol.L}^{-1} \cdot \text{s}^{-1}$$

الجواب

(A)

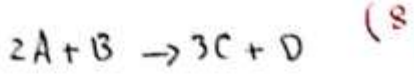


$$2 \quad 1.2 \quad 0 \quad 0$$

$$2 - 2x \quad 1.2 - x \quad +3x \quad +x$$

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2	1.2	0	0
2-2x	1.2-x	3x	x

$v = k[A]^2[B]$

$v = k(2-2x)^2(1.2-x)$

عند توقف التفاعل $v = 0$ لكن $k \neq 0$ بالتالي إما:
 $2-2x = 0 \Rightarrow 2x = 2 \Rightarrow x = 1 \text{ mol L}^{-1}$

$[A] = 2 - 2x = 2 - 2 = 0 \text{ mol L}^{-1}$

$[B] = 1.2 - x = 1.2 - 1 = 0.2 \text{ mol L}^{-1}$

$[C] = 3x = 3 \text{ mol L}^{-1}$

$[D] = x = 1 \text{ mol L}^{-1}$ هذا مقبول

$1.2 - x = 0 \Rightarrow x = 1.2 \text{ mol L}^{-1}$ أمر!

$\Rightarrow [A] = 2 - 2x = 2 - 2 \cdot 1.2 = -0.4 \text{ mol L}^{-1}$

$[B] = 1.2 - x = 1.2 - 1.2 = 0 \text{ mol L}^{-1}$

$[C] = 3x = 3.6 \text{ mol L}^{-1}$

$[D] = x = 1.2 \text{ mol L}^{-1}$

هذا منطوقه لا يوجد تراكيز ثابتة
 الجواب

بعد زمن

$[A] = 1.4 - x = 0.7$

$\Rightarrow x = 1.4 - 0.7 = 0.7 \text{ mol L}^{-1}$

$[B] = 2.2 - 2x = 2.2 - 1.4 = 0.8 \text{ mol L}^{-1}$

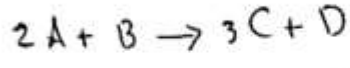
$v = k[A][B]^2$

$= 4 \times 10^{-2} (0.7)(0.8)^2$

$= 17.92 \times 10^{-3} \text{ mol L}^{-1} \cdot \text{s}^{-1}$

الجواب (B)

(6)



2	1.2	0	0
2-2x	1.2-x	+3x	+x

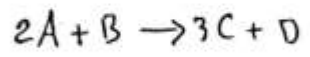
كل 1.2 مول من مادة B يتفاعل فيها 20 مول من X

كل 100 " " " " " " 100 " "

$x = \frac{20 \times 1.2}{100} = 0.24 \text{ mol L}^{-1} = [D]$

الجواب (B)

(7)



2	1.2	0	0
2-2x	1.2-x	3x	x

$[B] = 1.2 - x = 0.3 \Rightarrow$

$x = 1.2 - 0.3 = 0.9 \text{ mol L}^{-1}$

$[C] = 3x = 3 \times 0.9 = 2.7 \text{ mol L}^{-1}$

الجواب (A)

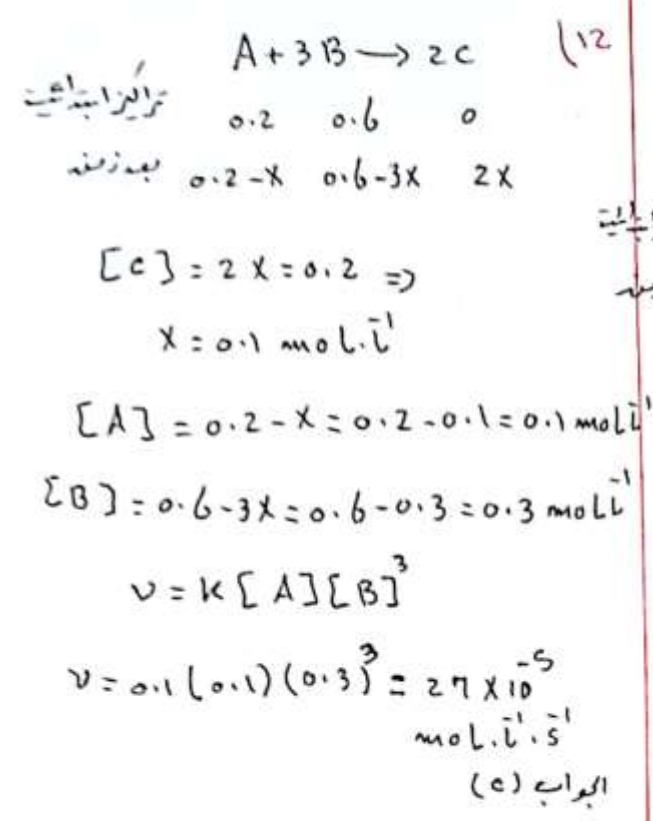
١١

$$v = k [A][B]^3 \quad (11)$$

$$= 0.1 (0.2)(0.6)^3$$

الجواب (ب)

$$= 4.32 \times 10^{-3} \text{ mol.l}^{-1}.s^{-1}$$



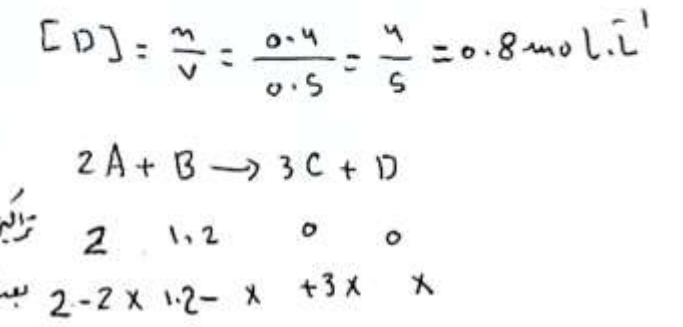
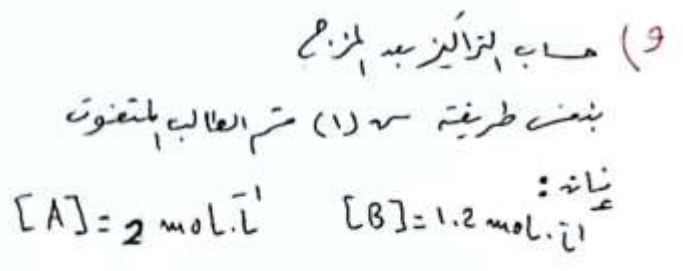
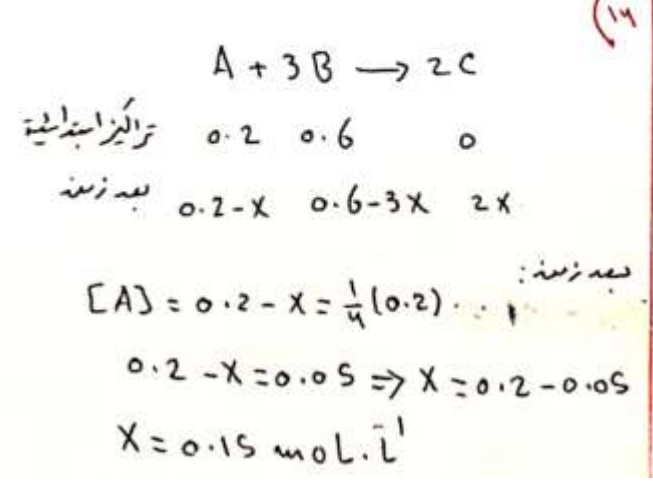
١٣

$$v = k [A][B]^3 \quad (13)$$

$$v' = k \left(\frac{[A]}{2} \right) (3[B])^3$$

$$v' = \frac{27}{2} k [A][B]^3 = \frac{27}{2} v$$

الجواب (أ)



$$[D] = x = 0.8 \text{ mol.l}^{-1}$$

$$[A] = 2 - 2x = 2 - 1.6 = 0.4 \text{ mol.l}^{-1}$$

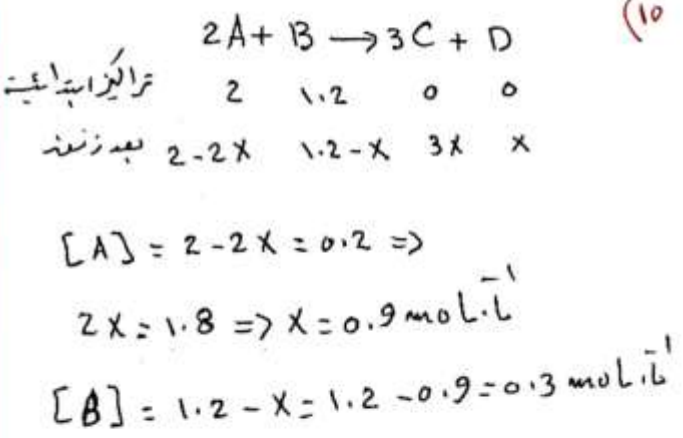
$$[B] = 1.2 - 0.8 = 0.4 \text{ mol.l}^{-1}$$

$$v = k [A]^2 [B]$$

$$= 5 \times 10^{-2} (0.4)^2 (0.4)$$

$$= 32 \times 10^{-4} \text{ mol.l}^{-1}.s^{-1}$$

الجواب (د)



$$v = k [A]^2 [B]$$

$$= 5 \times 10^{-2} (0.2)^2 (0.3)$$

$$= 6 \times 10^{-4} \text{ mol.l}^{-1}.s^{-1}$$

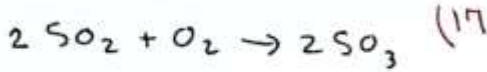
الجواب (ب)

8

$$PV = nRT \Rightarrow V = \frac{nRT}{P}$$

$$V = \frac{0.8 \times 0.082 \times 300}{1} = 0.48 \text{ L}$$

الجواب (D)

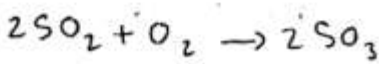


$$v_1 = k[\text{SO}_2]^2[\text{O}_2]$$

لكن:

$$\frac{[\text{SO}_2]_0}{[\text{O}_2]_0} = \frac{3}{2} \Rightarrow [\text{SO}_2]_0 = \frac{3}{2}[\text{O}_2]_0$$

$$y = \frac{3}{2}z \quad \Leftarrow \begin{cases} [\text{SO}_2]_0 = y \\ [\text{O}_2]_0 = z \end{cases}$$



التركيزات
بعد زمن

بعد زمن

$$\begin{array}{ccc} y & z & 0 \\ y-2x & z-x & 2x \end{array}$$

$$z-x = \frac{1}{2}z \Rightarrow$$

$$x = z - \frac{1}{2}z = \frac{1}{2}z$$

بالتالي بعد زمن:

$$[\text{SO}_2] = y - 2x = \frac{3}{2}z - 2\left(\frac{1}{2}z\right)$$

$$[\text{SO}_2] = \frac{1}{2}z$$

$$[\text{O}_2] = z - x = z - \frac{1}{2}z = \frac{1}{2}z$$

$$v_1 = k[\text{SO}_2]^2[\text{O}_2]$$

$$v_1 = k\left(\frac{3}{2}z\right)^2(z)$$

$$v_1 = k\left(\frac{9}{4}z^2\right)(z) = \frac{9}{4}kz^3$$

$$v_2 = k\left(\frac{1}{2}z\right)^2\left(\frac{1}{2}z\right) = \frac{1}{8}kz^3$$

$$\frac{v_1}{v_2} = \frac{\frac{9}{4}kz^3}{\frac{1}{8}kz^3} = 18 \Rightarrow v_2 = \frac{1}{18}v_1$$

الجواب (A)

$$[\text{A}] = 0.2 - x = 0.2 - 0.15 = 0.05 \text{ mol}\cdot\text{L}^{-1}$$

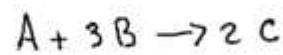
$$[\text{B}] = 0.6 - 3x = 0.6 - 0.45 = 0.15 \text{ "}$$

$$\Rightarrow v = k[\text{A}][\text{B}]^3$$

$$v = 0.1(0.05)(0.15)^3$$

$$v = 16.875 \times 10^{-6} \text{ mol}\cdot\text{L}^{-1}\cdot\text{s}^{-1}$$

الجواب (C)



التركيزات
بعد زمن

المدرس فراس قلعه جي
إجازة في العلوم الفيزيائية والكيميائية
ببلدوم في التاميل الترويكا
098888054

$$\begin{array}{ccc} 0.2 & 0.6 & 0 \\ 0.2-x & 0.6-3x & 2x \end{array}$$

$$v = k[\text{A}][\text{B}]^3$$

عند توقف التفاعل $v=0$ لكنه $k \neq 0$
بالتالي $0=0$

$$[\text{A}] = 0.2 - x = 0 \Rightarrow$$

$$x = 0.2 \text{ mol}\cdot\text{L}^{-1} \Rightarrow$$

بعد توقف التفاعل:

$$[\text{A}] = 0.2 - x = 0.2 - 0.2 = 0 \text{ mol}\cdot\text{L}^{-1}$$

$$[\text{B}] = 0.6 - 3x = 0.6 - 0.6 = 0 \text{ mol}\cdot\text{L}^{-1}$$

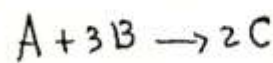
$$[\text{C}] = 2x = 0.4 \text{ mol}\cdot\text{L}^{-1}$$

أر:

$$[\text{B}] = 0.6 - 3x = 0 \Rightarrow$$

$$3x = 0.6 \Rightarrow x = \frac{0.6}{3} = 0.2 \text{ mol}\cdot\text{L}^{-1}$$

نفسه احد سابقه الجواب (A)

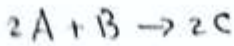


$$\begin{array}{ccc} 3 \text{ mol} & 2 \text{ mol} & \\ 1.2 \text{ mol} & n \text{ mol} & \end{array}$$

$$n = \frac{2 \times 1.2}{3} = 0.8 \text{ mol}$$

9

(21)



تركيز البداية	1	2	0
بعد زمن	1-2x	2-x	2x

عند توقف التفاعل $v=0$ $k \neq 0$ $v=0$ $k \neq 0$
 بالتالي: $x=1$

$$[A] = 1 - 2x = 0 \Rightarrow 2x = 1 \Rightarrow$$

$$x = \frac{1}{2} \text{ mol.l}^{-1}$$

وعندها: $[A] = 1 - 2x = 1 - 1 = 0 \text{ mol.l}^{-1}$

$$[B] = 2 - x = 2 - \frac{1}{2} = 1.5 \text{ mol.l}^{-1}$$

$$[C] = 2x = 2 \left(\frac{1}{2}\right) = 1 \text{ mol.l}^{-1}$$

أد: $[B] = 2 - x = 0 \Rightarrow x = 2 \text{ mol.l}^{-1}$

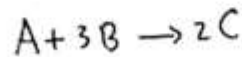
$$\Rightarrow [A] = 1 - 2x = 1 - 4 = -3 \text{ mol.l}^{-1}$$

$$[B] = 2 - x = 0 \text{ mol.l}^{-1}$$

$$[C] = 2x = 2 \text{ mol.l}^{-1}$$

كل من هذه ثلاث لا يوجد تركيز سالب
 الجواب (A)

(22)



تركيز البداية	0.5	0.3	0
بعد زمن	0.5-x	0.3-3x	2x

بعد زمن: $[B] = 0.3 - 3x = 0.15 \Rightarrow$

$$3x = 0.3 - 0.15 = 0.15 \Rightarrow x = \frac{0.15}{3}$$

$$x = 0.05 \text{ mol.l}^{-1}$$

بالتالي: $[A] = 0.5 - x = 0.5 - 0.05$

$$= 0.45 \text{ mol.l}^{-1}$$

$$[B] = 0.3 - 3x = 0.3 - 0.15 = 0.15 \text{ mol.l}^{-1}$$

$$[A] = \frac{n}{V} = \frac{2}{2} = 1 \text{ mol.l}^{-1} \quad (18)$$

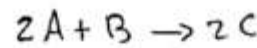
$$[B] = \frac{n}{V} = \frac{4}{2} = 2 \text{ mol.l}^{-1}$$

$$v = k [A]^2 [B]$$

$$v = 0.5 (1)^2 (2) = 1 \text{ mol.l}^{-1}.s^{-1}$$

الجواب (D)

(19)



تركيز البداية	1	2	0
بعد زمن	1-2x	2-x	2x

بعد زمن: $[C] = 2x = 0.4 \Rightarrow x = 0.2 \text{ mol.l}^{-1}$

$$[A] = 1 - 2x = 1 - 0.4 = 0.6 \text{ mol.l}^{-1}$$

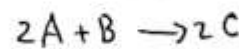
$$[B] = 2 - x = 2 - 0.2 = 1.8 \text{ mol.l}^{-1}$$

$$v = k [A]^2 [B]$$

$$= 0.5 (0.6)^2 (1.8) = 32.4 \times 10^{-2} \text{ mol.l}^{-1}.s^{-1}$$

الجواب (C)

(20)



تركيز البداية	2	3	0
بعد زمن	2-2x	3-x	2x

بعد زمن: $x = 0.3 \text{ mol.l}^{-1} \Leftrightarrow 2x = 0.6$

$$[A] = 2 - 2x = 2 - 0.6 = 1.4 \text{ mol.l}^{-1}$$

$$[B] = 3 - x = 3 - 0.3 = 2.7 \text{ mol.l}^{-1}$$

$$v = k [A]^2 [B]$$

$$= 0.1 (1.4)^2 (2.7) = 52.92 \times 10^{-2}$$

الجواب (D) $\text{mol.l}^{-1}.s^{-1}$

10



$$3 \quad 2 \quad 0 \quad 0$$

$$3-2x \quad 2-x \quad 2x \quad x$$

$$[D] = x = 1 \text{ mol.l}^{-1}$$

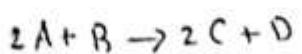
$$\Rightarrow [A] = 3 - 2x = 3 - 2 = 1 \text{ mol.l}^{-1}$$

$$[B] = 2 - x = 2 - 1 = 1 \text{ mol.l}^{-1}$$

$$v = k[A]^2[B]$$

$$= 2 \times 10^{-2} (1)^2 (1)$$

$$= 0.02 \text{ mol.l}^{-1}.s^{-1} \quad \text{الجواب (B)}$$



تركيز المادة
بعد زمن

$$3 \quad 2 \quad 0 \quad 0$$

$$3-2x \quad 2-x \quad 2x \quad x$$

لكن عند توقف التفاعل $v=0$ لأنه $k \neq 0$
بالتالي $x=3$

$$[A] = 3 - 2x = 0 \Rightarrow 2x = 3 \Rightarrow x = 1.5 \text{ mol.l}^{-1}$$

$$\Rightarrow [A] = 3 - 2x = 3 - 3 = 0 \text{ mol.l}^{-1}$$

$$[B] = 2 - x = 2 - 1.5 = 0.5 \text{ mol.l}^{-1}$$

$$[C] = 2x = 3 \text{ mol.l}^{-1}$$

$$[D] = x = 1.5 \text{ mol.l}^{-1}$$

$$[B] = 2 - x = 0 \Rightarrow x = 2 \text{ mol.l}^{-1}$$

$$\Rightarrow [A] = 3 - 2x = 3 - 4 = -1 \text{ mol.l}^{-1}$$

الحل من نوصد به وجه تركيز سالبة

$$v = k[A][B]^3$$

$$= 0.1(0.45)(0.15)^3$$

$$= 15.18 \times 10^{-5} \text{ mol.l}^{-1}.s^{-1}$$

الجواب (D)

$$[A]_0 = \frac{n}{V} = \frac{0.3}{50 \times 10^{-3}} = 6 \text{ mol.l}^{-1} \quad (23)$$

$$[B]_0 = \frac{n}{V} = \frac{0.2}{50 \times 10^{-3}} = 4 \text{ mol.l}^{-1}$$

نسب التوازن بعد التوازن:
قبل التوازن $n_A = n'_A$
بعد التوازن $n_B = n'_B$

$$C \times v = C' \times v'$$

$$6 \times 50 = C' \times 100 \Rightarrow$$

$$C' = \frac{6 \times 50}{100} = 3 \text{ mol.l}^{-1} = [A]$$

قبل التوازن $n_B = n'_B$
بعد التوازن $n_B = n'_B$

$$C \times v = C' \times v'$$

$$4 \times 50 = C' \times 100$$

$$C' = \frac{4 \times 50}{100} = 2 \text{ mol.l}^{-1} = [B]$$

$$v = k[A]^2[B]$$

$$v = 2 \times 10^{-2} (3)^2 (2)$$

$$= 0.36 \text{ mol.l}^{-1}.s^{-1}$$

الجواب (A)

(24) بنفس طريقة حل السؤال السابقة (23)

خاضع به التوازن:

$$[A] = 3 \text{ mol.l}^{-1}$$

$$[B] = 2 \text{ mol.l}^{-1}$$

$$[D] = \frac{n}{V} = \frac{0.1}{100 \times 10^{-3}} = 1 \text{ mol.l}^{-1}$$