



Sri Chaitanya IIT Academy, India

A.P, TELANGANA, KARNATAKA, TAMILNADU, MAHARASHTRA, DELHI, RANCHI

A right Choice for the Real Aspirant

ICON CENTRAL OFFICE, MADHAPUR-HYD

Sec: Sr. IPLCO

JEE ADVANCED

DATE : 06-12-15

TIME : 02:00 AM TO 05: 00 PM

2013_P2 MODEL

MAX MARKS : 180

KEY & SOLUTIONS

PHYSICS

1	ACD	2	AD	3	ABC	4	ABC	5	ABC	6	ACD
7	AD	8	ACD	9	A	10	B	11	A	12	D
13	C	14	B	15	A	16	A	17	A	18	B
19	D	20	A								

CHEMISTRY

21	ABC	22	BCD	23	AB	24	ABCD	25	ABC	26	BC
27	ABC	28	ABCD	29	C	30	D	31	A	32	A
33	A	34	B	B	A	36	B	37	A	38	D
39	B	40	B								

MATHEMATICS

41	ABCD	42	D	43	ABD	44	ABCD	45	BC	46	ABCD
47	ABD	48	ABD	49	D	50	D	51	A	52	B
53	A	54	B	55	B	56	C	57	A	58	A
59	A	60	A								

30. Water vapour = 0.1 : 0.5 (moles)

$$\therefore 1 : 5$$

31. $\frac{\partial \psi}{\partial x} = -\frac{2\pi}{\lambda} A \cos \frac{2\pi x}{\lambda}$

$$\frac{\partial^2 \psi}{\partial x^2} = -\frac{4\pi^2}{\lambda^2} A \sin \frac{2\pi x}{\lambda} = \frac{-4\pi^2}{\lambda^2} \psi$$

$$\lambda = \frac{h}{p} \text{ \& } P^2 = 2mKE$$

$$\therefore \frac{\partial^2 \psi}{\partial x^2} = \frac{-8\pi^2 m (KE) \psi}{h^2}$$

32. $\psi = A \sin \frac{2\pi x}{\lambda}$

'sin θ ' range (1 to 0)

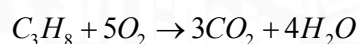
If $x = \frac{\lambda}{4}$ $\psi = A \sin \frac{\pi}{2} = A$

If $x = \frac{\lambda}{2}$, $\frac{2\pi x}{\lambda} = \pi \Rightarrow \sin \pi = 0$

33. Let $C_3H_8 = xcc$

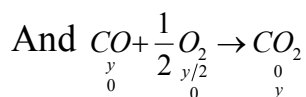
$$CO = ycc$$

$$\therefore O_2 = 100 - x - y$$



$$x + 5x \quad 0 \quad 0$$

$$0 \quad 0 \quad 3x$$



$$\text{Loss in volume} = \left(x + 5x + y + \frac{y}{2} \right) - (3x + y)$$

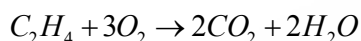
$$= 3x + \frac{y}{2} = 100 - 65 = 35cc$$

$$\text{Left } O_2 = 100 - x - y - \left(5x + \frac{y}{2} \right) = 25cc$$

$$6x + \frac{3}{2}y = 75cc$$

Solving : $x = 10\text{cc}$, $y = 10\text{cc}$

34. To consume $30\text{cc } O_2$ $10\text{cc } C_2H_4$ is required



35. $FeCl_3$ in hot water gives a +ve sol.

$\therefore [Fe(CN)_6]^{-4}$ is most effective

36. $As_2O_3 + 3H_2S \rightarrow As_2S_3 + 3H_2O$ (- ve sol)

$\therefore Al^{+3}$ is most effective

37. Farthest balmer line from UV $\Rightarrow 3 \rightarrow 2 \Rightarrow 1.88\text{ev}$

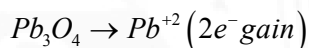
Lyman line closest to visible $\Rightarrow 2 \rightarrow 1 \Rightarrow 10.2\text{ev}$

$$KE = \frac{13.6 \times 2^2}{2^2} = 13.6\text{ev in } He^+$$

Limiting Balmer line $\alpha \rightarrow 2$

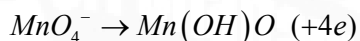
$$E = \frac{13.6}{2^2} = 3.4\text{ev}$$

38. a) $H_2S \rightarrow SO_2$ ($6e^-$ less)



$\therefore O : R \Rightarrow 3 : 1$

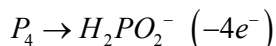
- b) $C_2H_2 \rightarrow C_2O_4^{-2}$ ($-8e^-$)



- c) $Al \rightarrow Al^{+3}$ ($3e^-$)



- d) $P_4 \rightarrow PH_3$ ($+12e^-$)



39. a) $Cl_2 \rightarrow Cl^- + Cl^+$ ($1e^-$ transfer) $\Rightarrow M$

- b) $NH_4NO_3 \rightarrow N_2O + 2H_2O$ ($4e^-$ transfer) $\Rightarrow \frac{M}{4}, \frac{2M}{4}$

- c) $OF_2 + H_2O \rightarrow 2HF + O_2$ ($2e^-$ transfer) $\Rightarrow \frac{M}{2}$

- d) $2NO_2 + H_2O \rightarrow HNO_2 + HNO_3$ ($1e^-$ transfer) $\Rightarrow \frac{2M}{1}$

40. Factual curves