



# 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

TIME : 3:00

JEE ADVANCED

2013\_P1 MODEL

DATE : 06-12-15

MAX MARKS : 180

## KEY & SOLUTIONS

### PHYSICS

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

### CHEMISTRY

21	D	22	C	23	A	24	A	25	B	26	A
27	D	28	C	29	B	30	B	31	AB	32	ABC
33	D	34	BD	35	C	36	4	37	3	38	1
39	5	40	2								

### MATHEMATICS

41	C	42	C	43	A	44	A	45	A	46	B
47	A	48	B	49	B	50	D	51	AD	52	ABC
53	C	54	AB	55	AB	56	3	57	4	58	3
59	1	60	8								

**CHEMISTRY**

21. Uncertainty principle lead to probability concept.

$$22. \Delta x \cdot \Delta p = \frac{h}{4\pi}$$

$$\Delta x \cdot \Delta v = \frac{h}{4\pi m}$$

Dividing both sides with 'v'

$$\Delta x \cdot \frac{\Delta v}{v} = \frac{h}{4\pi(mv)} = \frac{\lambda}{4\pi}$$

In ground state max  $\Delta x = 0.53 \times 2 = 1.06 \text{ \AA}$

$$1.06 \times \frac{\Delta v}{v} = \frac{3.3}{4\pi} \text{ \AA}$$

$$\frac{\Delta v}{v} = \frac{3}{4\pi} \Rightarrow \frac{75}{\pi}$$

23. For successive orbits  $n_2 - n_1 = 1$

$$\therefore (n_2^2 - n_1^2) = (n_2 + n_1)$$

24. Loss of mass =  $12 - 7.6 = 4.4$

$$\therefore \text{CaCO}_3 \text{ Present} = 10 \text{ gm}$$

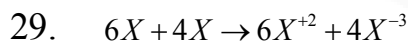
$$\therefore \text{Impurities} = 12 - 10 = 2 \text{ gm} \Rightarrow 16.6$$

25. Milk is an emulsion

26. In ' $\text{KHSO}_4$ ' oxygen is oxidised

27. Fact

28.  $\text{Cu}^+$  and  $\text{Cu}^+$  transfer one mole of electron



electrons transferred = 12

$$30. 20 \times N = 20 \times 0.32 \times 5$$

$$N = 1.6 = 0.8 \text{ M}$$

$$\therefore \text{H}_2\text{O}_2 \text{ decomposed } 1 \times 1 - 1 \times 0.8 = 0.2 \text{ mol}$$

$$\therefore \text{O}_2 \text{ Formed } 0.1 \text{ mol} = 3.2 \text{ gm}$$

31. Facts from Bohr's theory

32.  $\left(2 - \frac{r}{a}\right)$  decides the facts

As there is no angular part the function is independent on angular parametres

33. To knock out an electron energy of electron must be made zero, in single electron species.

34.  $4Mg + 10HNO_3 \rightarrow 4Mg(NO_3)_2 + NH_4NO_3 + 3H_2O$  out of '10'  $HNO_3$  moles '9' are providing spectator ions

35.  $KE = h\nu - h\nu_0$

36. Atom – 1

Atom – 2

$4 \rightarrow 3$

$4 \rightarrow 2$  (New)

$3 \rightarrow 2$

$2 \rightarrow 1$  (Repeat)

$4 \rightarrow 3$

$2 \rightarrow 1$

$3 \rightarrow 1$  (New)

37.  $He^+$  : single electron species

$2^{nd}$  excited state  $\Rightarrow n = 3$

$3s, 3p, 3d \Rightarrow 9$  states

$H^-$  : multielectron species:

$2^{nd}$  excited state  $\Rightarrow 2P \Rightarrow 3$  state

38. No. of soapions per micell =  $\frac{4 \times 10^{-17}}{1.6 \times 10^{-19}} = 250$

CMC =  $0.004 \times 250 = 1M$

39. Stopping potential of electron is numerically equal to KE. (in eV)

KE =  $10 - 5 = 5eV$

40.  $NaH + H_2O \rightarrow NaOH + H_2$

One electron transferred in the reaction