



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 : 03-01-16

TIME : 09:00 AM TO 12: 00 Noon

2013_P1 MODEL

MAX MARKS : 180

KEY & SOLUTIONS

PHYSICS

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

CHEMISTRY

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

MATHEMATICS

41	D	42	C	43	B	44	C	45	A	46	D
47	B	48	D	49	C	50	A	51	CD	52	ABCD
53	BD	54	ABD	55	ABC	56	4	57	2	58	3
59	4	60	6								

$$= \frac{-4 \times 10^{-12}}{21} \cdot \frac{2\pi}{12}$$

$$= \frac{\pi}{18} \times 10^{-12}$$

6. Principal axis for L_1 is 0.5 cm below x- axis and 0.5 cm above for L_2

For L_1

$$v = 100 \text{ cm} \quad m = -1$$

For L_2

$$v = 175/6 \text{ and } m = 5/12$$

7. $Q = \sigma(T_1^4 - T_3^4)$
 $= \sigma(T_3^4 - T_4^4)$
 $= \sigma(T_4^4 - T_2^4)$
 $3Q = \sigma(T_1^4 - T_2^4) = Q_0$

CHEMISTRY

21. Dissociation leads to lower molecular weight.

22. $m = \frac{2.4}{6.0} \times \frac{1000}{100} = 0.4m(\text{urea})$

$$0.1m \text{ Hg}_2(\text{NO}_3)_2 \Rightarrow 3 \times 0.1m = 0.3m(\text{particles})$$

$$\frac{2.4}{6.0} \times \frac{1000}{90} \Rightarrow m > (0.4m)$$

$\text{Hg}_2(\text{NO}_3)_2$ 0.24 m urea solutions suffer depression in freezing point than 0.2 m NaCl.

23. Nernst Equation based.

24. Fact.

25. Common ion effect on HCOOH by HCOONa and NH_4OH by NH_4Cl .

26. Fact.

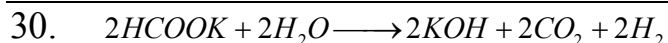
27. Change in Vanthoff Factor. After ppt is removed.

28. Boiling point of pure water 373K. Hence Ethanol – water azeotrope is a low boiling azeotrope.

29. $10^{-2} F \Rightarrow [H^+] = 10^{-2} (\text{to be developed})$

$$\text{Formed } [H^+] = 5 \times 10^{-3}$$

$$\therefore \text{efficiency} = \frac{5 \times 10^{-3}}{10^{-2}} \times 100 = 50\%$$



2 mol potassium formate $\Rightarrow 2 \times 22.4 \text{ ltrs}$

0.1 mole potassium formate $\Rightarrow 2.24 \text{ ltrs}$

After consumption of 0.1 F the solution becomes KOH.

31. On extrapolation the order of SRPS: $A > B > C > D$.

E_{cell}^0 maximum for 'A - D'

32. Greater the slope less valency more mole produced per faraday.

33. Fact.

34. Fact.

35. $i_1 C_1 = i_2 C_2$

$$i \times 0.1 = 1 \times 0.2 \Rightarrow i = 2$$

$$\Delta T_b = 0.1 \times 2 \times 0.52 = 0.104^\circ C$$

$$T_b = 100.104^\circ C$$

36. During dimerisation VantHoff factor varies between 0.5 to 1.0

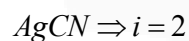
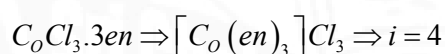
Maximum elevation $0.52^\circ C$

Minimum elevation $0.26^\circ C$

37. Change in oxidation state \times atomicity = number of faradays.

38. $E_{H^+/H_2} = -0.06 P^H$

39. $K_4Fe(CN)_6 \Rightarrow i = 5$



40. Faraday's 2nd law based $1F \Rightarrow 1 \text{ gm eq}$