Sri Chaitanya IIT Academy, India

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A right Choice for the Real Aspirant

ICON CENTRAL OFFICE, MADHAPUR-HYD

Sec: Sr. IPLCO   **Date: 26-09-15**
Time: 9:00 AM to 12:00 Noon   **RPTM-8**   **Max.Marks: 360**

KEY SHEET

CHEMISTRY		PHYSICS		MATHS	
Q.NO	ANSWER	Q.NO	ANSWER	Q.NO	ANSWER
1	4	31	3	61	1
2	3	32	2	62	1
3	4	33	2	63	1
4	2	34	3	64	3
5	2	35	3	65	2
6	1	36	2	66	3
7	4	37	2	67	1
8	3	38	4	68	4
9	1	39	3	69	1
10	4	40	4	70	1
11	3	41	3	71	4
12	4	42	2	72	3
13	2	43	3	73	4
14	3	44	4	74	3
15	4	45	3	75	3
16	4	46	3	76	4
17	3	47	1	77	3
18	4	48	1	78	1
19	3	49	2	79	4
20	4	50	1	80	2
21	2	51	3	81	2
22	2	52	4	82	3
23	3	53	2	83	2
24	1	54	2	84	4
25	4	55	3	85	4
26	4	56	3	86	3
27	2	57	1	87	3
28	1	58	3	88	1
29	2	59	4	89	3
30	3	60	2	90	1

PHYSICS

31. $\omega^2 \times X = \omega\sqrt{A^2 - x^2}$

   $x = 1 cm$

   $A = 2 cm$

   $\Rightarrow \omega = \dfrac{\sqrt{3}}{2\pi}$

32. $F_{net} = 4a - 2x - 2x = 4a - 4x$

   $ma = 4a - 4x$

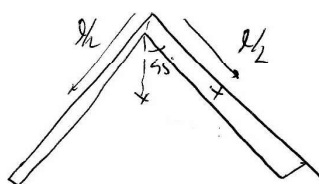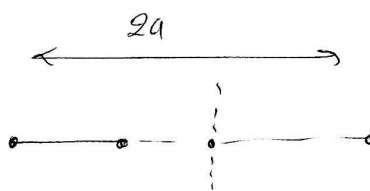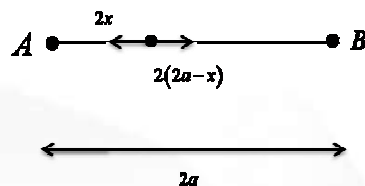 $a = a - x \Rightarrow \omega^2 = 1 \quad T = 2\pi$

   $\dfrac{2a}{4} = a\big/2$

   $t = \dfrac{T}{6} = \dfrac{2\pi}{6} = \dfrac{\pi}{3} \sec$

33. $T = 2\pi\sqrt{\dfrac{I}{mgd}}$

   Where $d = \dfrac{l}{2}\sqrt{2}$

   $I = 2 \times \dfrac{ml^2}{3}$

34. $T = 2\pi\sqrt{\dfrac{\left(\dfrac{MR^2}{2} + mx^2\right)}{Mgx}}$

   $\dfrac{dT}{dx} = 0 \Rightarrow x = \dfrac{R}{\sqrt{2}}$

35. $\dfrac{1}{4}\left(\dfrac{1}{2}mV^2_{max}\right) = \dfrac{1}{2}mV^2$

   $\dfrac{1}{4} \times \left(\dfrac{1}{2}m \times R^2\omega^2\right) = \dfrac{1}{2}m \times \omega^2\left(R^2 - x^2\right)$

   $BD = 2x$

36. $x_A = A\sin\left(\omega t + \pi\big/2\right)$
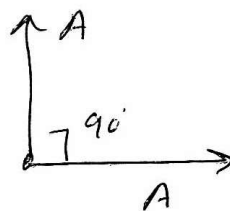
   $x_B = A\sin\left(\omega t + \pi\right)$

$$x_{A/B} = x_A - x_B = x_A + (-x_B)$$

$$x_{A/B} = \sqrt{2}A \sin\left(\omega t + \frac{\pi}{4}\right)$$

$$\omega t + \frac{\pi}{4} = \pi$$

$$\frac{2\pi t}{T} = \frac{3\pi}{4}$$

$$t = \frac{3\tau}{8}$$

37. $5 + K.E_{max} = 9$

$K.E_{max} = 4$

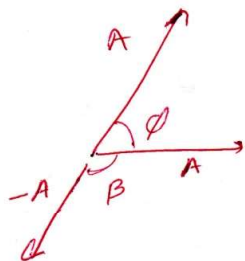$$\frac{1}{2}m(A\omega)^2 = 4$$

$A\omega = 2$ for   A=1

$$\omega = 2$$

$$T = \frac{2\pi}{\omega} = \pi$$

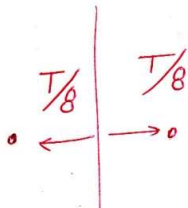38. $T = 2\pi\sqrt{\dfrac{I}{mgd}}$ where

$$d = \frac{l}{\sqrt{3}}$$

$$I = 2x\frac{ml^2}{3} + \frac{ml^2}{12} + m\left(\frac{\sqrt{3}l}{2}\right)^2$$
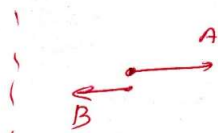
39.

$B = 120$ for resultant to be 20cm

$\varphi = 60$

40.   for max

$$x = A \sin \omega \times \frac{T}{8} = \frac{A}{\sqrt{2}} \Rightarrow 2x = \sqrt{2}A$$

Vavmax $\frac{\sqrt{2}A}{T/4}$

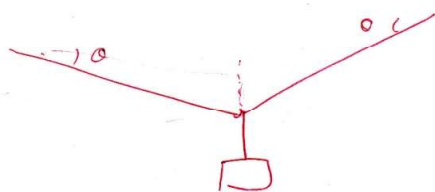41. $a = -\omega^2 \frac{d}{2} = (2\pi f)^2 \times \frac{d}{2}$

42.

$$X_A = \sin\left(\omega t + \frac{\pi}{6}\right)$$

$$X_B = \sin\left(\omega t + \frac{5\pi}{6}\right)$$

$$\varphi_B - \varphi_A = \frac{5\pi}{6} - \frac{\pi}{6} = \frac{2\pi}{3}$$

43. $T = 2\pi\sqrt{\dfrac{l}{g_{eff}}} = 2\pi\sqrt{\dfrac{l}{\left(g + \dfrac{g}{4}\right)}}$

44.

$$2T \sin\theta = mg \rightarrow 2T\theta = mg$$

$$T \sin(\theta + \varphi) = mg = ma$$

$$2T\theta + 2t\varphi - mg = ma$$

$$T\varphi = ma$$

$$2 \times T \times 2x = ma$$

$a \alpha x$

45.   conceptual

46.   conceptual

47.   conceptual

48.

$$2K \frac{x}{2} \times \frac{1}{2} + Kx = ma$$

$$\frac{3Kx}{2} = ma$$

49.   conceptual

50.   conceptual

51. $\frac{1}{Keq} = \frac{1}{K_1} + \frac{1}{K_2} + ...$

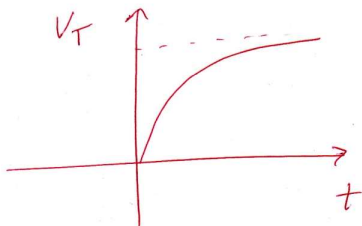52.   conceptual

53.   conceptual

54.   conceptual

55.   acclamation in always opposite to displacement

56. $6\pi \eta rv = \frac{4}{3}\pi r^3 \sigma g$

57.   viscous force is electromagnetic

58.   conceptual

59.   conceptual

60.