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–ADVANCE** **Date: 15-11-15**

Time: 3 Hours **2011-P2-Model** **Max Marks: 240**

KEY & SOLUTIONS

CHEMISTRY

1	**D**	2	**A**	3	**A**	4	**C**	5	**D**	6	**A**
7	**A**	8	**D**	9	**AB**	10	**AB**	11	**ABCD**	12	**ABD**
13	**6**	14	**4**	15	**5**	16	**4**	17	**7**	18	**4**
19	**A – P, S,T; B – Q,R,T; C – P,T; D – Q,R,T**	20	**A – P,R,S,T; B –P,Q,R,S,T; C – P,Q,T; D – P,Q,T**								

PHYSICS

21	**C**	22	**B**	23	**C**	24	**B**	25	**C**	26	**B**
27	**A**	28	**C**	29	**BD**	30	**ABD**	31	**AC**	32	**ABD**
33	**7**	34	**4**	35	**2**	36	**9**	37	**5**	38	**2**
39	**A-P,R; B- S; C-P,Q,R; D-P,R**	40	**A-P,Q; B-R,S; C-Q,R; D-Q,R**								

MATHEMATICS

41	**B**	42	**A**	43	**B**	44	**A**	45	**C**	46	**B**
47	**C**	48	**A**	49	**AC**	50	**AC**	51	**BD**	52	**ABCD**
53	**0**	54	**4**	55	**4**	56	**4**	57	**7**	58	**2**
59	**A - Q ; B - S ; C - P ; D - P**	60	**A - Q ; B - R ; C - S ; D - P**								

PHYSICS

21. $B = \frac{\mu_0}{2} Jr, \quad J = I \Big/ \frac{3}{4}\pi R^2$ and $r = R/2$

22. $\tau = BANI = C\theta$

$\Rightarrow \frac{\theta}{I} = \frac{BAN}{C}$

23. The points LiR on a single straight on either side of element at equal distance.

24. $\frac{\mu_0}{2} Jr \quad = \frac{\mu_0}{2\pi R} J \times \pi a^2$

25. $\oint \vec{B}.d_1^{-1} = \mu_0 I_{enclosed}$.

26. $dB = \frac{\mu_0 dI}{2r}$, $dI = wrdr\sigma$

$\therefore B = \int_{r=0}^{R} dB$

27. The force is along negative x-axis. Consider two elements symmetric to y-axis and analyse the force.

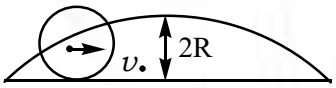
28. $dF = BI\frac{dr}{\cos 37}$, $B = \frac{\mu_0 I}{2\pi r}$;

$F = \int_{r=a}^{a+\frac{8a}{5}} dF$

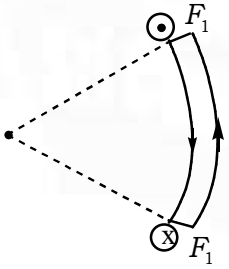
29. In (A), (C) the particle cannot remain in XY-plane

30. Compare the problem with a point on the circumference of a rolling wheel $v_0 = \frac{E}{B}$

$R = \frac{mE}{eB^2}$

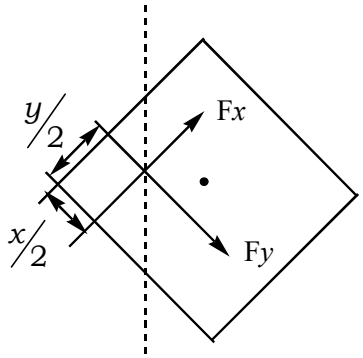


31. $\overrightarrow{B_1} \uparrow 1\, I_2 \Rightarrow F = zero$



Turns in clockwise direction.

32. $\tau_{net} = F_y \frac{(l-y)}{2} - \frac{F_x (l-x)}{2}$



$$= \frac{BI}{2}\left[y(l-y)-x(l-x)\right] \& \; y > x$$

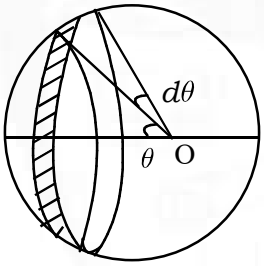
$$= \frac{BI}{2}\left[l(y-x)-\left(y^2-x^2\right)\right]$$

$$= \frac{BI}{2}(y-x)\left[l-(x+y)\right] \text{ is counter clock wise whenever } l > (x+y)$$

33. $\vec{B} = \frac{\mu_0 I}{4\pi R}\left(-\hat{i}\right) + \frac{\mu_0 I}{8R}\left(-\hat{i}\right) + \frac{\mu_0 I}{4\pi R}\left(-\hat{k}\right)$

34. $B = \frac{\mu_0}{2} Jd$

35. $dB = \frac{\mu_0 dI\left(R\sin\theta\right)^2}{2R^3}, \;\; dI = \frac{N}{\pi} d\theta$



$$B = 2\int_0^{\pi/2} dB$$

36. $\frac{u_E}{u_B} = \frac{\left(\frac{1}{2} \in_0 E^2\right)}{\left(\frac{B^2}{2\mu_0}\right)} = \left(\mu_0 \in_0\right)\left(\frac{E}{B}\right)^2$

37. $B2\pi r = \mu_0 \int \frac{J_0 r}{a} 2\pi r dr$

38. $T = 2\pi\sqrt{\frac{d}{g}}, \;\; d = 0.01m$