Sri Chaitanya IIT Academy.,India.

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A right Choice for the Real Aspirant

ICON Central Office - Madhapur - Hyderabad

SEC: Sr.Super60_STERLING BT | **JEE-MAIN** | **Date: 27-09-2025**

Time: 09:00AM to 12:00PM | **RPTM-08** | **Max. Marks: 300**

KEY SHEET

MATHEMATICS

1	**2**	2	**2**	3	**3**	4	**2**	5	**2**
6	**4**	7	**1**	8	**1**	9	**3**	10	**4**
11	**2**	12	**3**	13	**2**	14	**1**	15	**2**
16	**1**	17	**1**	18	**2**	19	**4**	20	**1**
21	**2**	22	**7**	23	**7**	24	**5**	25	**4**

PHYSICS

26	**1**	27	**1**	28	**3**	29	**4**	30	**2**
31	**3**	32	**2**	33	**2**	34	**4**	35	**4**
36	**2**	37	**4**	38	**4**	39	**1**	40	**3**
41	**3**	42	**4**	43	**4**	44	**3**	45	**4**
49	**2**	47	**6**	48	**50**	49	**625**	50	**57**

CHEMISTRY

51	**2**	52	**1**	53	**3**	54	**1**	55	**3**
56	**4**	57	**1**	58	**4**	59	**3**	60	**4**
61	**1**	62	**1**	63	**1**	64	**4**	65	**2**
66	**1**	67	**2**	68	**1**	69	**2**	70	**2**
71	**17**	72	**4**	73	**10**	74	**7**	75	**12**

SOLUTIONS
MATHEMATICS

1. $adj\left(adjA\right)=\left|A\right|^{n-2}\cdot A$

Here n=3

$\therefore adj\left(adjA\right)=\left|A\right|\cdot A$

$\left|A\right|=3(-3+4)+3(2)+4(-2)=1$

$\therefore adj\left(adjA\right)=A$

2. $A)\left|M_r\right|=\frac{1}{r-1}-\frac{1}{r}$

$=\lim_{n\to\alpha}\sum_{r=2}^{n}\left(\frac{1}{r-1}-\frac{1}{r}\right)$

$=\lim_{n\to\alpha}\left[\left(\frac{1}{1}-\frac{1}{2}\right)+\left(\frac{1}{2}-\frac{1}{3}\right)+-----+\left(\frac{1}{n-1}-\frac{1}{n}\right)\right]$

$=1-0=1$

B) $(A+B)^2=A^2+B^2$

$\Rightarrow AB+BA=0$

$\Rightarrow AB=-BA$

$\Rightarrow\left|AB\right|=\left|-BA\right|$

$\Rightarrow\left|A\right|\left|B\right|=-\left|B\right|\left|A\right|$

A and B are odd ordered matrices

$\Rightarrow\left|B\right|=-\left|B\right|\left(\because\left|A\right|=2\right)$

$\Rightarrow\left|B\right|=0$

$C)K^2=\left|C\right|=\left(\det A\right)^2=4^2\Rightarrow K=4$

$D)A^4=-4I\Rightarrow\lambda=4$

3. $\left[A\left[adj\left(A^{-1}\right)+adj\left(B^{-1}\right)\right]^{-1}\cdot B\right]^{-1}$

$=B^{-1}\cdot\left[adj\left(A^{-1}\right)+adj\left(B^{-1}\right)\right]\cdot A^{-1}$

$=B^{-1}\cdot adj\left(A^{-1}\right)\cdot A^{-1}+B^{-1}\left[adj\left(B^{-1}\right)\right]\cdot A^{-1}$

$=B^{-1}\left|A^{-1}\right|\cdot I+\left|B^{-1}\right|\cdot I\cdot A^{-1}$

$=\frac{B^{-1}}{\left|A\right|}+\frac{A^{-1}}{\left|B\right|}$

$=\frac{adjB}{\left|B\right|\left|A\right|}+\frac{adjA}{\left|A\right|\cdot\left|B\right|}$

$=\frac{1}{\left|A\right|\left|B\right|}\left(adjB+adjA\right)$

4. $P^2=\begin{bmatrix}1&0&0\\4&1&0\\16&4&1\end{bmatrix}\begin{bmatrix}1&0&0\\4&1&0\\16&4&1\end{bmatrix}=\begin{bmatrix}1&0&0\\8&1&0\\48&8&1\end{bmatrix}$

$$P^3=\begin{bmatrix}1&0&0\\12&1&0\\96&12&1\end{bmatrix}$$

$$P^n=\begin{bmatrix}1&0&0\\4n&1&0\\8(n^2+n)&4n&1\end{bmatrix}$$

$$P^{50}=\begin{bmatrix}1&0&0\\200&1&0\\8\times 50(51)&200&1\end{bmatrix}$$

$P^{50}-Q=I$

$\therefore$ Equating we get

$200-q_{21}=0\Rightarrow q_{21}=200$

$400\times 51-q_{31}=0$

$\Rightarrow q_{31}=400\times 51$

$200-q_{32}=0\Rightarrow q_{32}=200$

$$\Rightarrow \frac{q_{31}\times q_{32}}{q_{21}}=\frac{400\times 51+200}{200}=2(51)+1=103$$

5. Using $c_1\to c_1-bc_3, c_2\to c_2+ac_3$

$$\Delta=(1+a^2+b^2)^2\begin{vmatrix}1&0&-2b\\0&1&2a\\b&-a&1-a^2+b^2\end{vmatrix}$$

Using $c_3\to c_3+2bc_1$

$$\Delta=(1+a^2+b^2)^2\begin{vmatrix}1&0&0\\0&1&2a\\b&-a&1-a^2+b^2\end{vmatrix}$$

$\Delta=(1+a^2+b^2)^3$

Since $A.M\ge G.M$

$$\frac{1+a^2+b^2}{3}\ge\left(a^2b^2\right)^{\frac{1}{3}}$$

6. Given $A^3-2A^2-4A+4I=0$

$\Rightarrow A^3=2A^2+4A-4I$

$\Rightarrow A^4=2A^3+4A^2-4A$

$=2\left(2A^2+4A-4I\right)+4A^2-4A$

$\Rightarrow A^4=8A^2+4A-8I$

$\Rightarrow A^5=8A^3+4A^2-8A$

$=8\left(2A^2+4A-4I\right)+4A^2-8A$

$\Rightarrow A^5=20A^2+24A-32I$

$\therefore \alpha=20,\beta=24,\gamma=-32$

$\therefore \alpha+\beta+\gamma=12$

7. $A=\begin{bmatrix}0 & -2\\ 2 & 0\end{bmatrix}$

$A^2=\begin{bmatrix}-4 & 0\\ 0 & -4\end{bmatrix}=-4I$

$A^3=-4A$

$A^4=(-4)^3\cdot I$

$\therefore M=\sum_{K=1}^{10} A^{2k}=A^2+A^4+---+A^{20}$

$=\left[-4+(-4)^2+(-4)^3+---+(-4)^{10}\right]I$

It is G.p

$a=-4, r=-4$ and $n=10$

$S_{10}=\frac{4}{5}\left[2^{20}-1\right]I$

$\Rightarrow$ M is symmetric matrix

$N=\sum_{k=1}^{10} A^{2k-1}=A+A^3+---+A^{19}$

$=A\left[I+(-4)+(-4)^2+---+(-4)^9\right]$

$N=A\left[\frac{1(-4)^{10}-1}{-4-1}\right]$

$=\frac{A\left[(2)^{20}-1\right]}{5}$

So N is skew symmetric matrix

$\Rightarrow$ N^2 is symmetric matrix

$\therefore MN^2$ is non-identity symmetric matrix

8. $a+b+c=-2, ab+bc+ca=0, abc=-1$

$\begin{vmatrix}a & b & c\\ b & c & a\\ c & a & b\end{vmatrix}=a(bc-a^2)-b(b^2-ac)+c(ab-c^2)$

$=-(a^3+b^3+c^3-3abc)$

$=-(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$

$=-(-2)[(-2)^2-3(0)]=8$

9. $|A-xI|=0\Rightarrow\begin{vmatrix}1-x & 5\\ \lambda & 10-x\end{vmatrix}=0$

$\Rightarrow x^2-11x+10-5\lambda=0$

$\Rightarrow A^2-11A+(10-5\lambda)I=0$

$\Rightarrow (10-5\lambda)A^{-1}=-A+11I$

($\because$ Given $A^{-1}=\alpha A+\beta I$)

$\alpha=\frac{-1}{10-5\lambda}$ and $\beta=\frac{11}{10-5\lambda}$

$\alpha+\beta=-2\Rightarrow\frac{10}{10-5\lambda}=-2$

$\Rightarrow\lambda=3$

$\alpha=\frac{1}{5}$ and $\beta=\frac{-11}{5}$

$4\alpha^2+\beta^2+\lambda^2$

$=\frac{4}{25}+\frac{121}{25}+9$

$=14$

10. $\Delta=\begin{vmatrix}a_1+b_1w & a_1w^2+b_1 & c_1+b_1\overline{w}\\ a_2+b_2w & a_2w^2+b_2 & c_2+b_2\overline{w}\\ a_3+b_3w & a_3w^2+b_3 & c_3+b_3\overline{w}\end{vmatrix}$

$c_2\to wc_2$

$\Delta=\frac{1}{w}\begin{vmatrix}a_1+b_1w & a_1w^3+b_1w & c_1+b_1\overline{w}\\ a_2+b_2w & a_2w^3+b_2w & c_2+b_2\overline{w}\\ a_3+b_3w & a_3w^3+b_3w & c_3+b_3\overline{w}\end{vmatrix}$

$=\frac{1}{w}\begin{vmatrix}a_1+b_1w & a_1+b_1w & c_1+b_1\overline{w}\\ a_2+b_2w & a_2+b_2w & c_2+b_2\overline{w}\\ a_3+b_3w & a_3+b_3w & c_3+b_3\overline{w}\end{vmatrix}(\because w^3=1)$

$=0$

11. $\lim_{x\to0}f(x)=\begin{vmatrix}a+1 & 1 & b\\ a & 1+1 & b\\ a & 1 & b+1\end{vmatrix}$

Expanding along R_1

$=(a+1)(2(b+1)-b)+1(ab-a(b+1))-ba$

$=(a+1)(b+2)-a-ab$

$=b+a+2$

$=\lambda+\mu a+\gamma b$

$\therefore\lambda=2,\mu=1,\gamma=1$

$\therefore(\lambda+\mu+\gamma)^2=16$

12. Putting r=1,2,3,----n

$\sum1=n,\sum r=\frac{(n+1)n}{2}$

$\sum(2r-1)=1+3+5+---=n^2$

$\sum_{r=1}^{n}\Delta_r=\begin{vmatrix}n & n & n\\ n(n+1) & n^2+n+1 & n^2+1\\ n^2 & n^2 & n^2+n+1\end{vmatrix}=56$

Applying $c_1\to c_1-c_3, c_2\to c_2-c_3$

$$\begin{vmatrix} 0 & 0 & n \\ 0 & 1 & n^2+n \\ -n-1 & -n-1 & n^2+n+1 \end{vmatrix} = 56$$

$n(n+1)=56$

$n^2+n-56=0$

$(n+8)(n-7)=0$

$\Rightarrow n=7 (n \neq -8)$

13. $(I-A)\begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$

$$= \begin{bmatrix} 1 & \tan\frac{\alpha}{2} \\ -\tan\frac{\alpha}{2} & 1 \end{bmatrix} \begin{bmatrix} \frac{1-\tan^2\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} & \frac{-2\tan\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} \\ \frac{2\tan\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} & \frac{1-\tan^2\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} \end{bmatrix}$$

$$= \begin{bmatrix} \frac{1+\tan^2\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} & \frac{-\tan\frac{\alpha}{2}\left[1+\tan^2\frac{\alpha}{2}\right]}{1+\tan^2\frac{\alpha}{2}} \\ \frac{\tan\frac{\alpha}{2}\left(1+\tan^2\frac{\alpha}{2}\right)}{1+\tan^2\frac{\alpha}{2}} & \frac{1+\tan^2\frac{\alpha}{2}}{1+\tan^2\frac{\alpha}{2}} \end{bmatrix}$$

$$= \begin{bmatrix} 1 & -\tan\frac{\alpha}{2} \\ \tan\frac{\alpha}{2} & 1 \end{bmatrix}$$

$=I-A$

14. $M = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$

$\therefore tr(M^T M) = a^2+b^2+c^2+d^2+e^2+f^2+g^2+h^2+i^2=5$

Where entries are $\{0,1,2\}$

Only two cases are possible

Case(i): Five entries are 1 and other four are 0

No.of matrices $= 9_{c_5} \times 1 = 126$

Case(ii): One entry is 2,one entry is 1 and others are 0

No.of matrices $= 9_{c_2} \times 2! = 72$

So,total no.of matrices =126+72=198

15. $|A| = 7\log_5^2 \cdot \log_2^5 - \frac{3}{2}\log_2^5 \cdot \log_5^2 = \frac{11}{2}$

$$C_{11} = \sum_{k=1}^{2} a_{1k} \cdot A_{1k} = a_{11}A_{11} + a_{12}A_{12} = |A| = \frac{11}{2}$$

$$C_{12} = \sum_{k=1}^{2} a_{1k} \cdot A_{2k} = 0$$

$$C_{21} = \sum_{k=1}^{2} a_{2k} \cdot A_{1k} = 0$$

$$C_{22} = \sum_{k=1}^{2} a_{2k} \cdot A_{2k} = |A| = \frac{11}{2}, C = \begin{bmatrix} \frac{11}{2} & 0 \\ 0 & \frac{11}{2} \end{bmatrix}$$

$$|C| = \frac{121}{4} \Rightarrow 8|C| = 242$$

16. Let $A(K,-3K), B(5,K)$ and $C(-K,2)$

$$\frac{1}{2}\left\| \begin{matrix} k & -3k & 1 \\ 5 & k & 1 \\ -k & 2 & 1 \end{matrix} \right\| = 28$$

$\Rightarrow 5k^2 + 13k - 46 = 0$ (or) $5k^2 + 13k + 66 = 0$

$k = \frac{-23}{5}, 2$

Since K is an integer $\therefore k = 2$

Also $5k^2 + 13k + 66 = 0$

$K = \frac{-13 \pm \sqrt{-1151}}{10}$

So no real solution exist

$A(2,-6), B(5,2), C(-2,2)$

For orthocenter $H(\alpha, \beta)$

$BH \perp AC$

$\therefore \left(\frac{\beta - 2}{\alpha - 5}\right)\left(\frac{8}{-4}\right) = -1$

$\alpha - 2\beta = 1 \rightarrow eq1$

Also $CH \perp AB$

$\therefore \left(\frac{\beta - 2}{\alpha + 2}\right)\left(\frac{8}{3}\right) = -1$

$\Rightarrow 3\alpha + 8\beta = 1 \rightarrow eq2$

From eq1 & eq2

$\alpha = 2, \beta = \frac{1}{2}$

Orthocenter is $\left(2, \frac{1}{2}\right)$

17. $BC = \begin{bmatrix} 3 & 4 \\ 2 & 3 \end{bmatrix}\begin{bmatrix} 3 & -4 \\ -2 & 3 \end{bmatrix} \Rightarrow BC = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

$$tr(A)+tr\left(\frac{ABC}{2}\right)+tr\left(\frac{A(BC)^2}{4}\right)+tr\left(\frac{A(BC)^3}{8}\right)+---+\infty=\frac{tr(A)}{1-\frac{1}{2}}$$

$$=2tr(A)=2(2+1)=6$$

18. $A^2=\begin{bmatrix}-7 & -12\\ 24 & 17\end{bmatrix}$

$f(A)=A^2-3A+7$

$f(A)=\begin{bmatrix}-7 & -12\\ 24 & 17\end{bmatrix}-\begin{bmatrix}3 & -6\\ 12 & 15\end{bmatrix}+\begin{bmatrix}7 & 0\\ 0 & 7\end{bmatrix}$

$f(A)=\begin{bmatrix}-3 & -6\\ 12 & 9\end{bmatrix}$

$\Rightarrow f(A)+\begin{bmatrix}3 & -6\\ -12 & -9\end{bmatrix}$

$=\begin{bmatrix}0 & 0\\ 0 & 0\end{bmatrix}$

19. $\Delta=0$

20. $C_1\to C_1-2\sin xC_3$ and

$C_2\to C_2+2\cos xC_3$

$f(x)=\begin{vmatrix}2 & 0 & -\sin x\\ 0 & 2 & \cos x\\ \sin x & -\cos x & 0\end{vmatrix}$

$f(x)=2\cos^2 x+2\sin^2 x=2$

$f^1(x)=0$

$\therefore \int_0^{\frac{\pi}{2}}\left[f(x)+f^1(x)\right]dx$

$=\int_0^{\frac{\pi}{2}}2dx=\pi$

21. We have $A^2=0$

$A^k=0,\forall K\geq 2$

$(A+I)^{50}=I+50A$

$\therefore a+b+c+d=1+0+0+1=2$

22. $a=\sum_{k=1}^{9}a_k=\sum_{k=1}^{9}K\cdot 10_{c_K}=10\sum_{K=1}^{9}9_{C_{K-1}}=102^9-1$

$b=\sum_{k=1}^{9}(10-K)10_{c_k}=10\sum_{k=1}^{9}9_{c_{9-k}}=102^9$

$\frac{ab}{2^9-1}=102^9=102400$

$\therefore sum=7$

23. $|A|=2$

$$\underbrace{\left|adj\left(adj\left(adj......(A)\right)\right)\right|}_{2024 times}=|A|^{(n-1)^{2024}}$$

$$|A|^{2^{2024}}=2^{2^{2024}}$$

$$2^{2024}=(2^2).2^{2022}=4(8)^{674}=4(9-1)^{674}$$

$\Rightarrow$ divided by 9 get remainder =4

So, $2^{2024}=9m+4, m\leftarrow even$

$$2^{9m+4}=16(2^3)^{3m}=16(9-1)^{3m}$$

$$\Rightarrow 9\alpha+16=9\alpha+9+7$$

$$\text{Re}mainder=7$$

24. For infinitely many solutions,

$$\Delta=\Delta_1=\Delta_2=\Delta_3=0$$

$$\Delta=\begin{vmatrix}1 & -2 & 3\\ 2 & 1 & 1\\ 1 & -7 & a\end{vmatrix}=0$$

$$\Rightarrow a=8$$

$$\Delta_3=\begin{vmatrix}1 & -2 & 9\\ 2 & 1 & b\\ 1 & -7 & 24\end{vmatrix}=0$$

$$\Rightarrow b=3$$

$$\therefore a-b=8-3=5$$

25. $$\left|adjA^{-1}\right|=\left|A^{-1}\right|^2=\frac{1}{|A|^2}$$

$$\left|(adjA^{-1})^{-1}\right|=\frac{1}{\left|adjA^{-1}\right|}$$

$$=|A|^2=2^2=4$$

SOLUTIONS
PHYSICS

26. F=BT $\left(L_{eff}\right)$

$\left(L_{eff}\right)$=Length normal to B $\overline{=}$RQ

FORCE= $2\times5\times\frac{4}{100}=0.4N$

27. M=NIA $\hat{n}$

=1x10x10^{-2}($\cos60^0\hat{i}-\cos60^0\hat{k}$)

=0.1 $\left(\frac{\hat{i}}{2}-\frac{\sqrt{3}}{2}\hat{k}\right)$ A.m^2

=0.05 $\left(\hat{i}-\sqrt{3}\hat{k}\right)$ A.m^2

28. $v=\left(g\sin\theta\right)t$

$n=mg\cos-2vB=0\Rightarrow t=\frac{m\cot\theta}{2B}$

29. $\frac{B_1}{B_2}=\frac{\mu_0 i_1}{2r}\times\frac{2r}{\mu_0 i_2}\Rightarrow\frac{1}{3}=2.\frac{i_1}{i_2}$

$=\frac{i_1}{i_2}=\frac{1}{6}$

30. $\left(L_{eff}\right)$=AB=4 $\hat{j}$

F= $=I\left(\bar{L}\times\bar{B}\right)$

$=2\left(4\hat{J}\times4\left(-\hat{K}\right)\right)=-32\hat{i}\,N$

31. For inner cylinder B=$\frac{\mu_0}{2\pi}\frac{i.r}{R_1^2},B\times r$

For air space = $B=\frac{\mu_0 i}{2\pi r},B\times\frac{1}{r}$

For outer cylinder $B=\frac{\mu_0 i}{2\pi r}-\frac{\mu_0 i}{2\pi r}\left(\frac{r^2-R_2^2}{R_3^2-R_2^2}\right)$

32. $(A)M=\frac{q\omega}{2\pi}\times\pi r^2=\frac{q\omega r^2}{2}$

$(B)M=\frac{q\omega}{2\pi}\times\pi r^2=\frac{q\omega r^2}{2}$

$(C)M=\int_0^R\frac{q\left(2\pi r\right)dr}{\pi R^2}\times\frac{\omega}{2\pi}\times\pi r^2=\frac{q\omega}{R^2}.\int_0^R r^3dr=\frac{q\omega R^4}{2R^2}$

$=\frac{q\omega R^2}{4}$

33. $r = \frac{m\vartheta}{2B}$

34. $T = \frac{2\pi m}{2B}$

35. Conceptual

36. Conceptual

37. Conceptual

38. Conceptual

39. $\frac{qB}{m} = \left[T^{-1}\right]$

40. Conceptual

41. $S = \frac{G}{n-1}$

42. For

$r < \frac{R}{2}$

$B = 0$

$for \frac{R}{2} \le r \subseteq R$

$B \times 2\pi r = \mu_0 j\pi\left[r^2 - \frac{R^4}{4}\right]$

$B = \frac{\mu_0 j}{2}\left[R - \frac{R^4}{4r}\right]$

43. Conceptual

44. $B = \frac{\mu_0 Ni}{l}, l = \frac{\mu_0 Ni}{B} = \frac{4\pi \times 10^{-7} \times 300 \times 0.5}{2 \times 100} = 30$

45. B due to curved wire= $\frac{\mu_0 i}{4r}\left(\frac{\theta}{2\pi}\right)$, B due to straight wire $= \frac{\mu_0 i}{4\pi r}$

46. Magnetic moment of two system

$dq = \frac{q}{l}dr$

$= \int Adi = \int A\frac{dg}{T} = \int_0^l \pi r^2\left[\frac{q}{l}dr\right]\frac{\omega}{2\pi}$

$= \frac{q\omega}{2l}\int_o^l r^2 dr = \frac{q\omega}{2l}.\frac{l^3}{3} = \frac{q\omega l^2}{6}$

47.

$$r < \frac{R}{2}$$

$$B = 0$$

48. B $for \frac{R}{2} \le r \subseteq R$

$$B \times 2\pi r = \mu_0 j\pi \left[r^2 - \frac{R^4}{4} \right]$$

$$B = \frac{\mu_0 j}{2} \left[R - \frac{R^4}{4r} \right]$$

F=BILsinθ=BIL

F=mg==$\frac{\mu_0 I^2 L}{2\pi h} = mg$

h=$\frac{\mu_0 I}{2\pi B}$

=50x10^4

49. $B = \mu_0 ni, T = \frac{2\pi m}{2B}$

50. If the coil is tures through angle 'θ' the restoring Torque-MBsinθ=-MBθ=$I\alpha$

$$-I\alpha^2 B\theta = \frac{ma^2}{6}\alpha = \frac{ma^2}{6}\left(-\omega^2\theta\right)$$

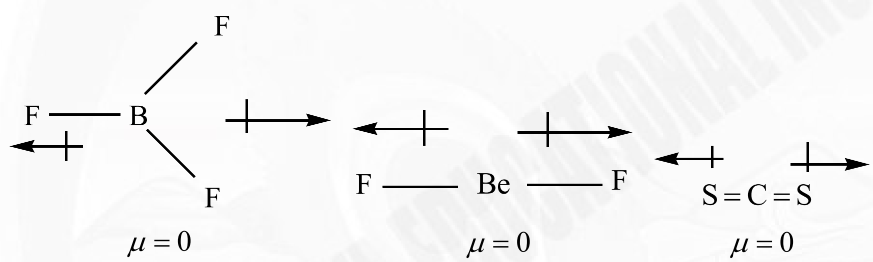
$$\omega = \sqrt{\frac{6IB}{m}} = \frac{2\pi}{T} \Rightarrow T = 2\pi\sqrt{\frac{m}{6IB}} = 0.573s$$

$$= \frac{\mu_0 I}{2\pi h}$$

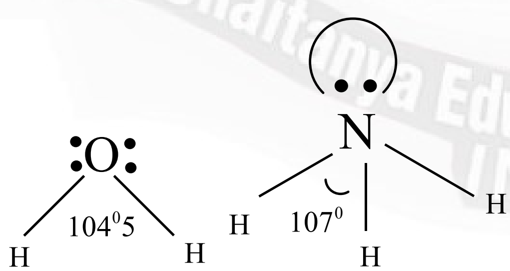
SOLUTIONS

CHEMISTRY

51. Conceptual
52. Completely filled (or) half-filled orbitals= stable electronic configuration
53. cl^{-1}, ca^{+2} having 18 electrons
54. $He - \boxed{\uparrow\downarrow}$ Completely filled orbitals = highest I.E
55. Principal quantum number(n) for the outermost shell (or) the valence shell indicates a period in the modern periodic table
56. In period from left to right metal nature sec↓ in graphs from top to bottom metallic nature ↑ses
57. IUPAC names
58. Metal oxides= Basic nature
    Non- metal oxides= acidic nature
59.



60. XeF_2, I_3^- Both Are AB_2E_3 Type, Both are linear
61. $T = \dfrac{V + M - C + A}{2}$
62. The wave function are phase out
63. The π antibonding MO has a node between the nucleus.
64. % of Ionic character $= \dfrac{\mu_{obs}}{\mu_{cal}} \times 100$
65. Explained by hyper conjugation
66.



67. B.A of $H_2O <$ B.A of SO_2, because the presence of two L.P in H_2O due to which repulsions is greater so BA decreases to greter extent.
68. Conceptual
69. N>O<F

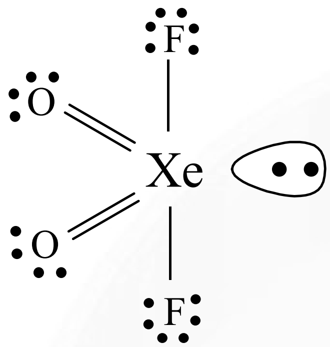
Due to 'N' has haly –hilled configuration

70. Conceptual

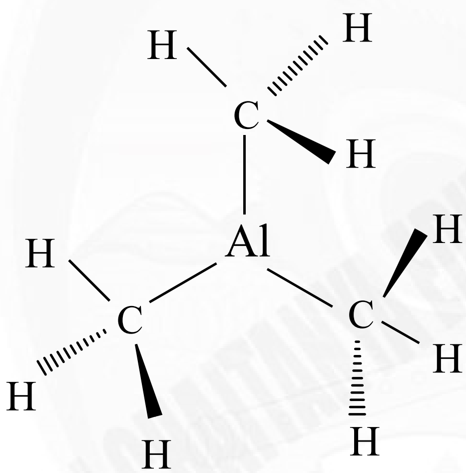
71. % of Ionic character $=16(X_A - X_B)+3.5(X_A - X_B)^2$

72. $IE_1 < IE_2 < IE_3 < IE_4 < ...... < IE_5$ belongs to IV A group

73.



74.



75. Conceptual