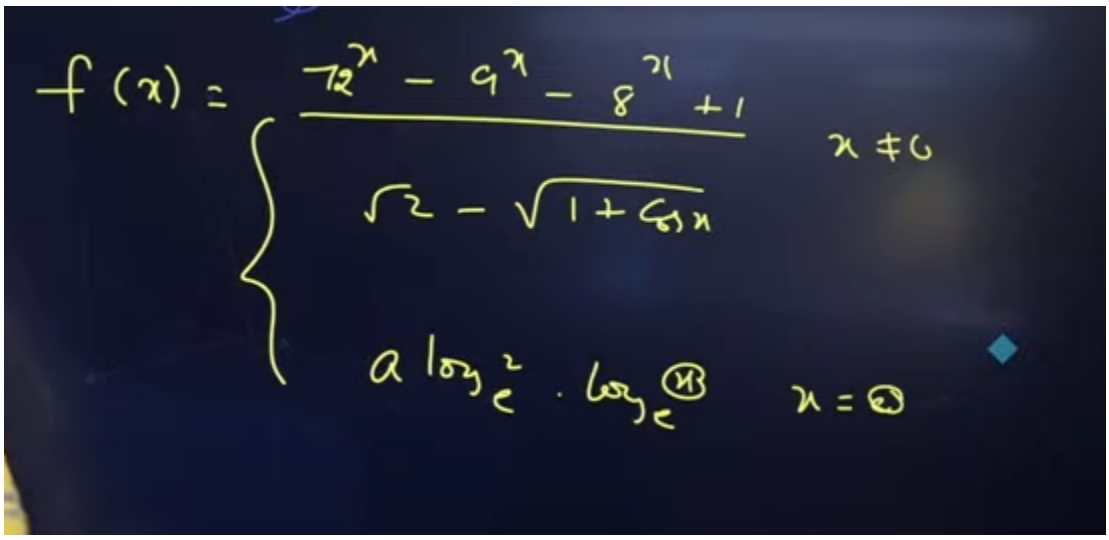
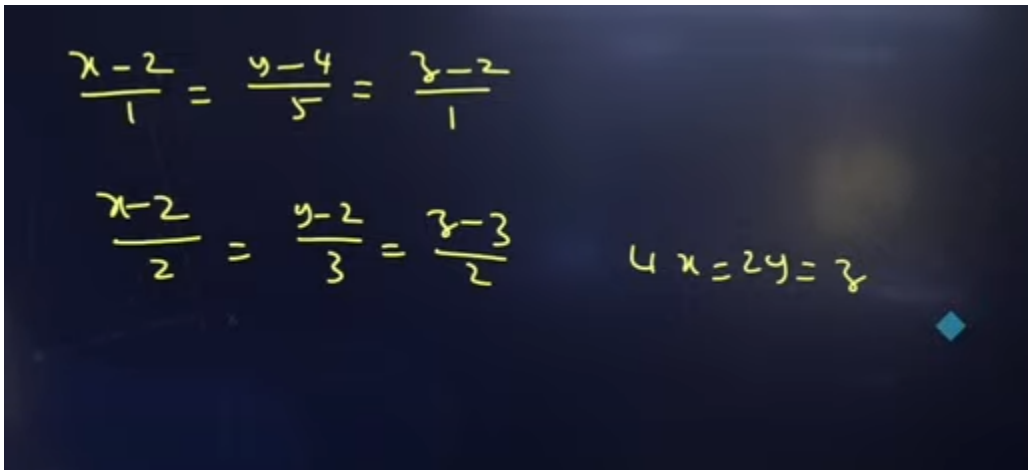
JEE Main 2024 April 4 Shift 2 Question Paper

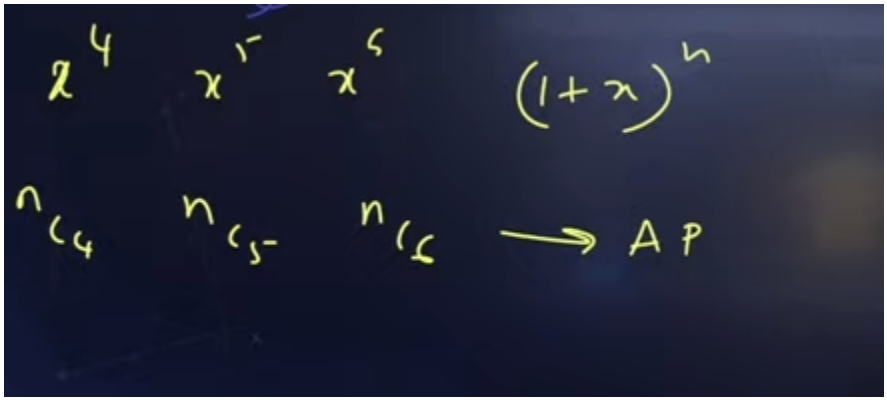
1.



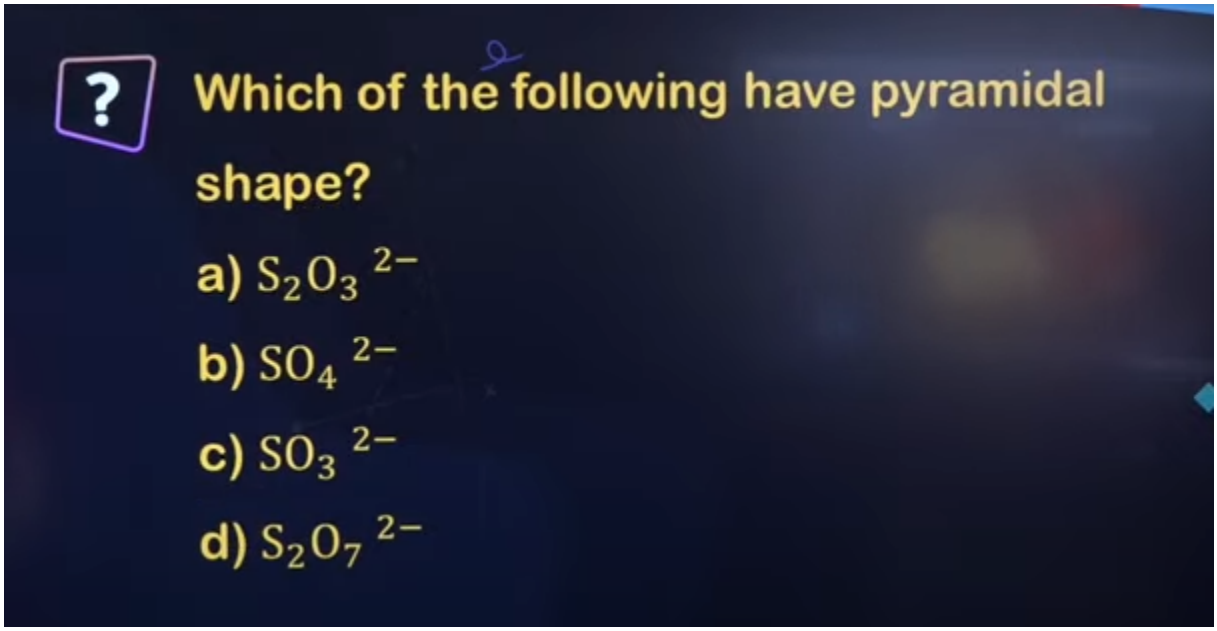
2.



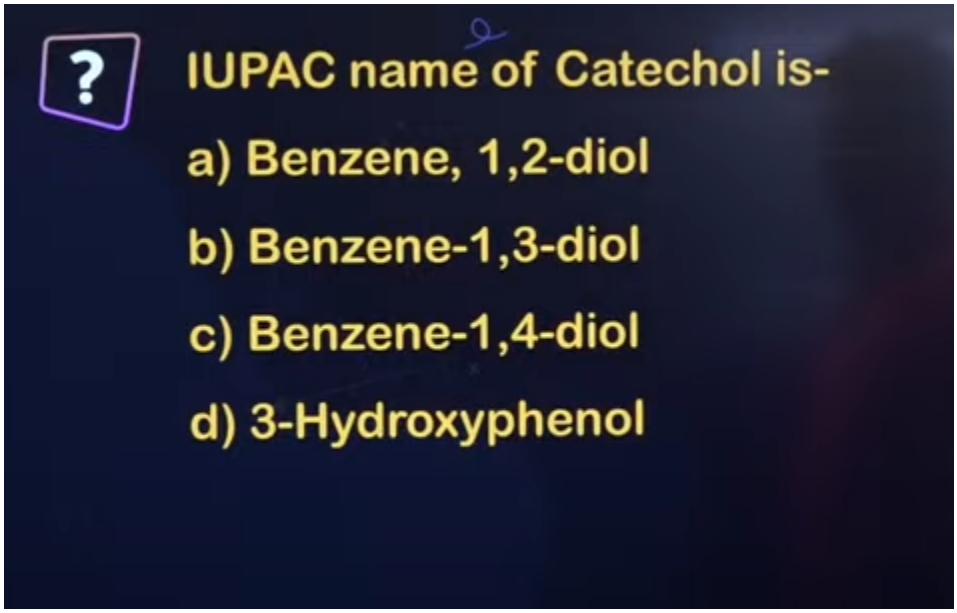
3.


x^4 x^{1-} x^5 $(1+x)^n$
n_{C_4} $n_{C_{5-}}$ n_{C_r} ⟶ AP

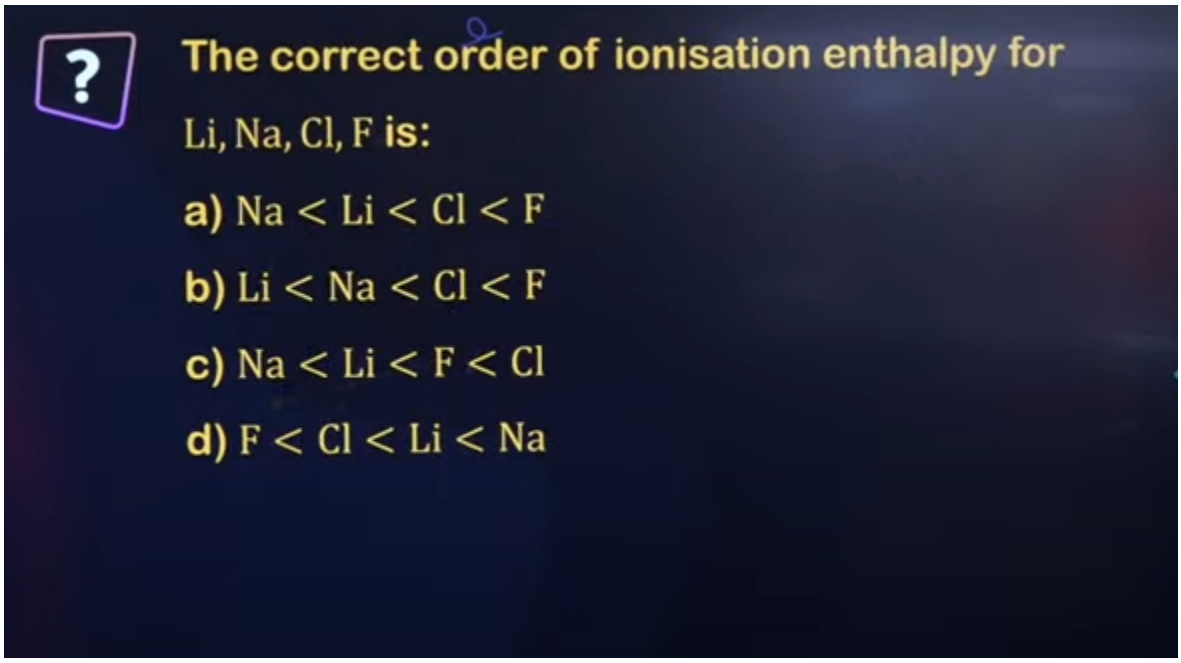
4.


?
Which of the following have pyramidal shape?
a) $S_2O_3^{2-}$
b) SO_4^{2-}
c) SO_3^{2-}
d) $S_2O_7^{2-}$

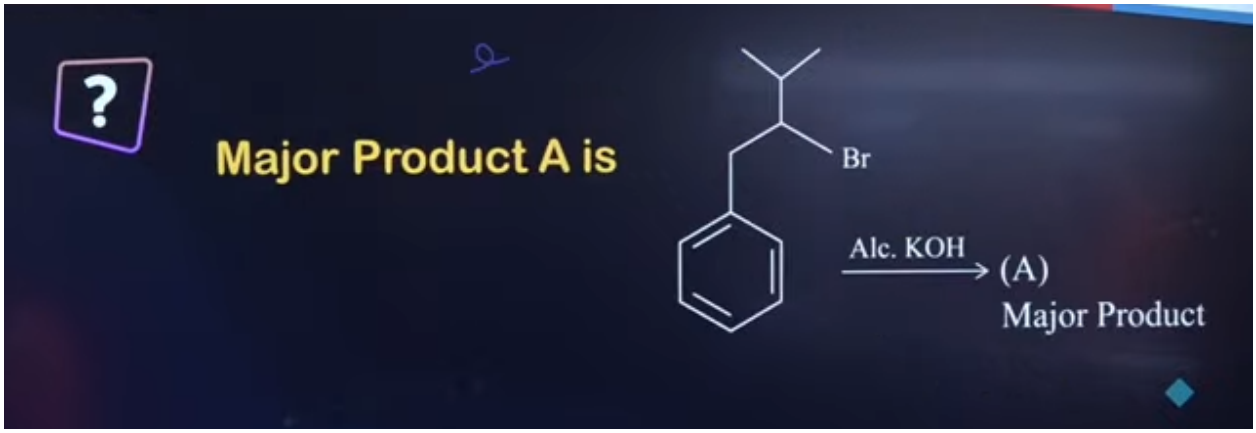
5.


IUPAC name of Catechol is-
a) Benzene, 1,2-diol
b) Benzene-1,3-diol
c) Benzene-1,4-diol
d) 3-Hydroxyphenol

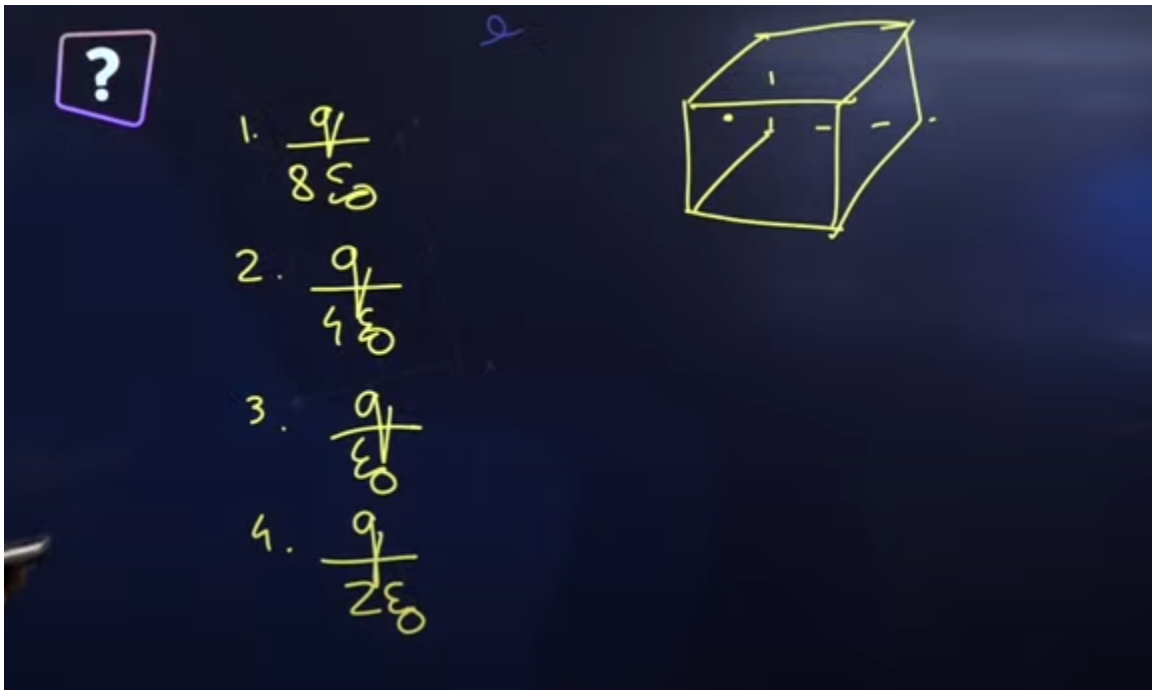
6.


The correct order of ionisation enthalpy for
Li, Na, Cl, F is:
a) Na < Li < Cl < F
b) Li < Na < Cl < F
c) Na < Li < F < Cl
d) F < Cl < Li < Na

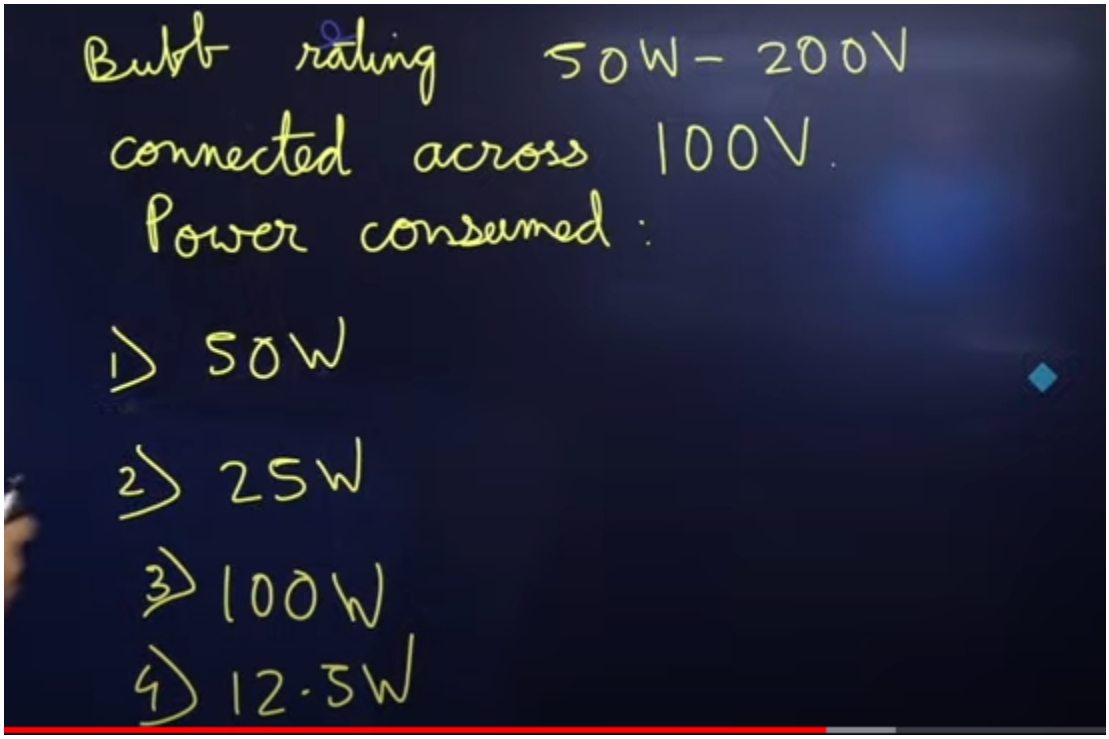
7.


Major Product A is
Br
Alc. KOH
(A)
Major Product

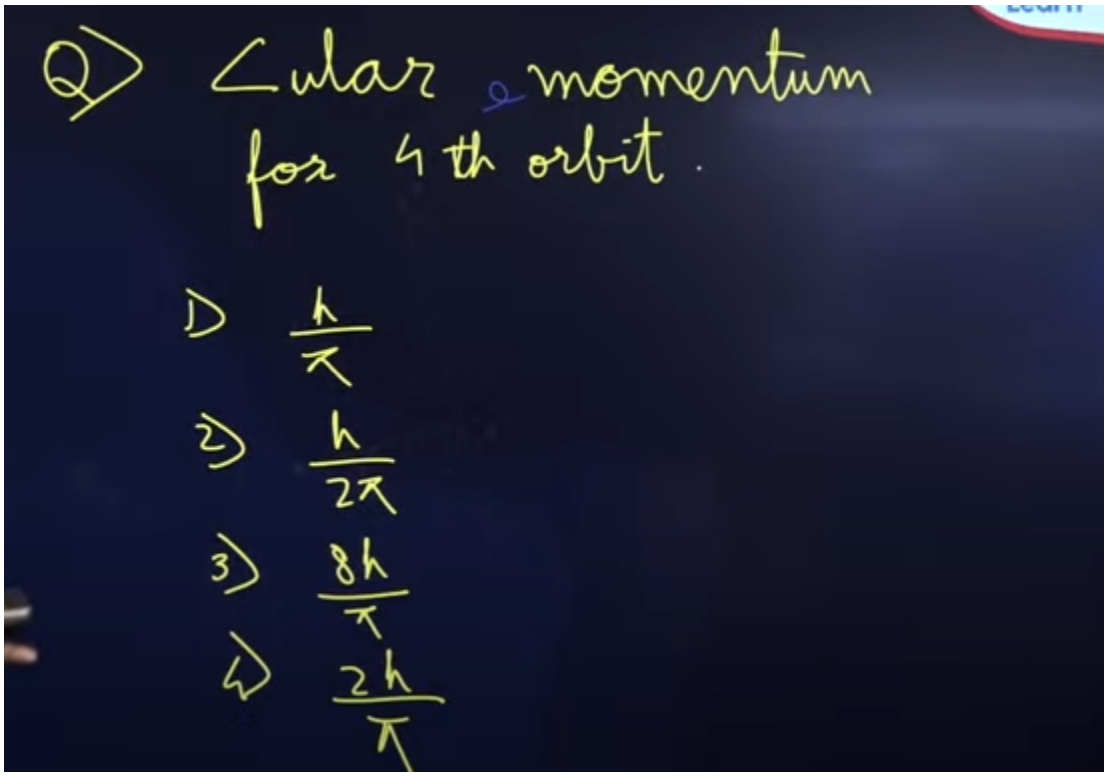
8.


1. $\frac{q}{8\varepsilon_0}$
2. $\frac{q}{4\varepsilon_0}$
3. $\frac{q}{\varepsilon_0}$
4. $\frac{q}{2\varepsilon_0}$

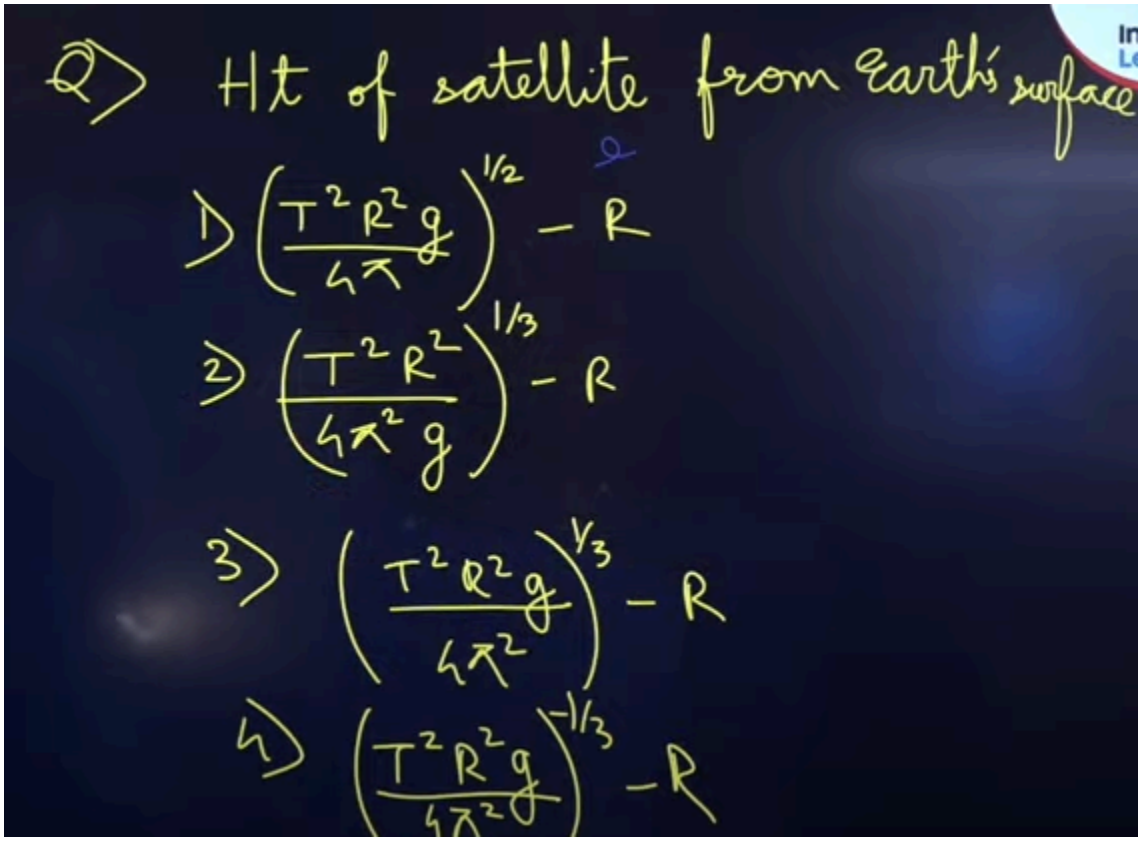
9.


Bulb rating 50W - 200V
connected across 100V.
Power consumed :
1) 50W
2) 25W
3) 100W
4) 12.5W

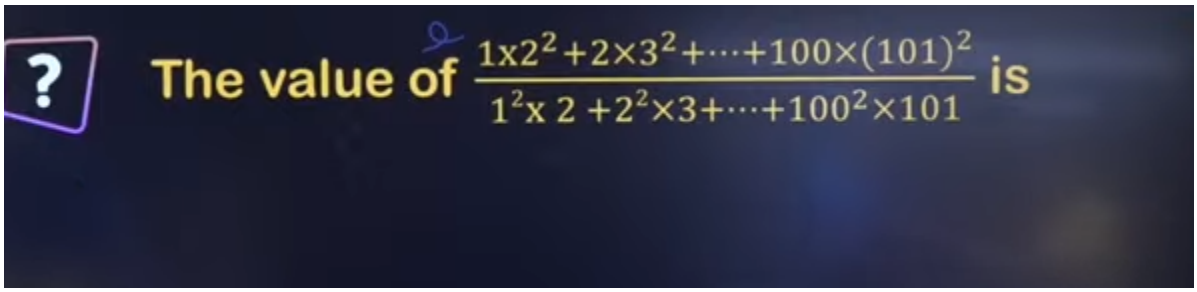
10.


Q) Angular momentum for 4th orbit.
1) $\frac{h}{\pi}$
2) $\frac{h}{2\pi}$
3) $\frac{8h}{\pi}$
4) $\frac{2h}{\pi}$

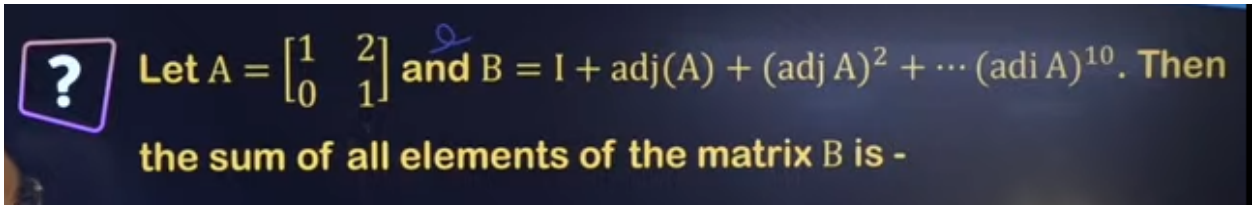
11.


Q) Ht of satellite from earth's surface
1) $\left(\frac{T^2R^2g}{4\pi^2}\right)^{1/2} - R$
2) $\left(\frac{T^2R^2}{4\pi^2 g}\right)^{1/3} - R$
3) $\left(\frac{T^2R^2g}{4\pi^2}\right)^{1/3} - R$
4) $\left(\frac{T^2R^2g}{4\pi^2}\right)^{-1/3} - R$

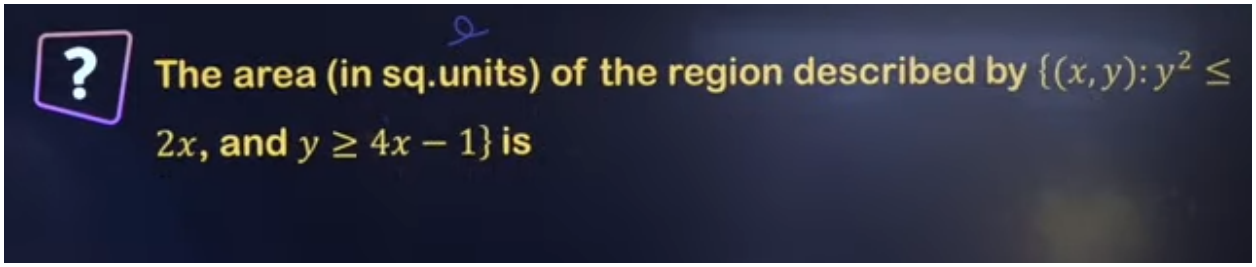
12.


? The value of $\frac{1x2^2+2\times3^2+\cdots+100\times(101)^2}{1^2x\,2+2^2\times3+\cdots+100^2\times101}$ is

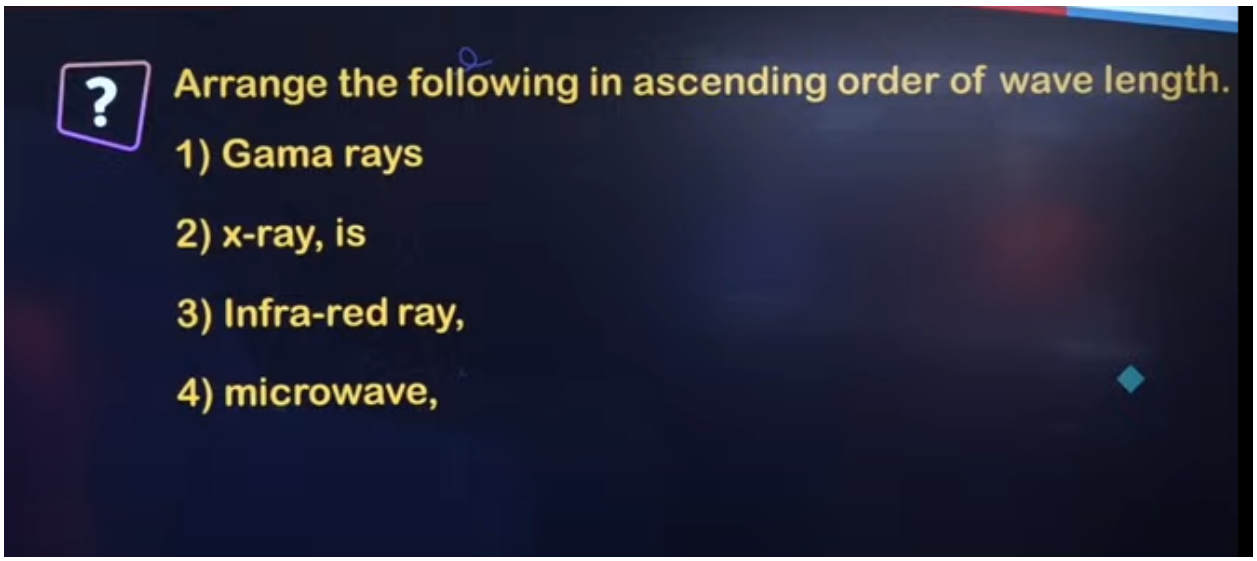
13.


? Let $A=\begin{bmatrix}1 & 2\\ 0 & 1\end{bmatrix}$ and $B = I + adj(A) + (adj\,A)^2 + \cdots (adi\,A)^{10}$. Then the sum of all elements of the matrix B is -

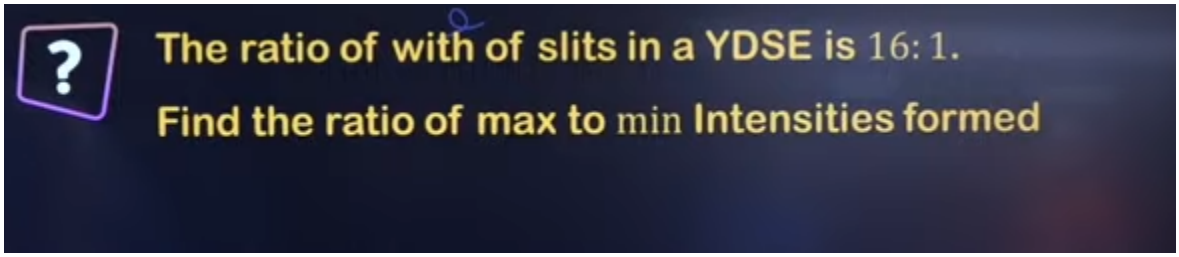
14.


The area (in sq.units) of the region described by $\{(x,y): y^2 \leq 2x$, and $y \geq 4x-1\}$ is

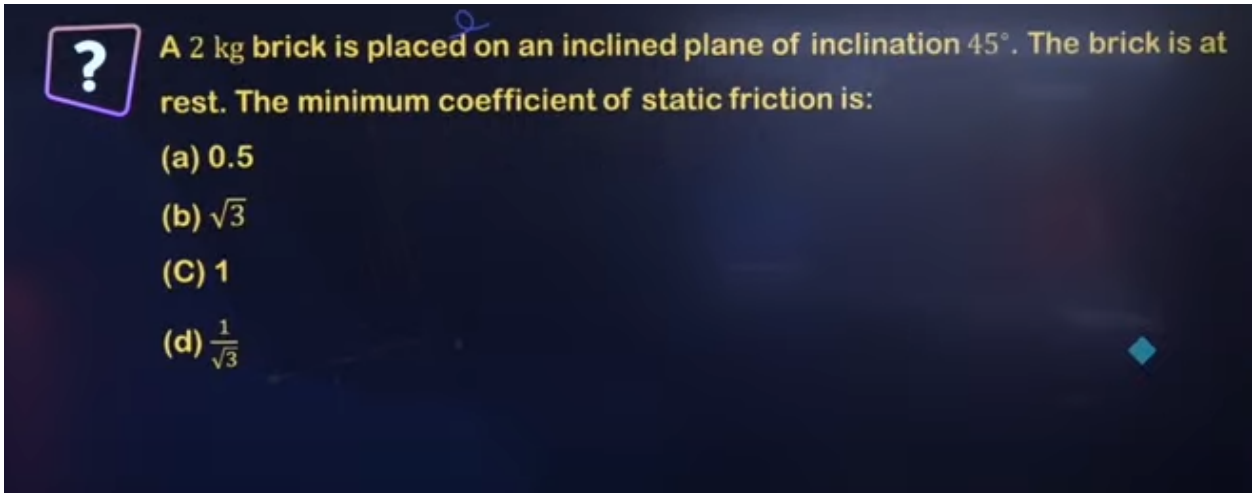
15.


Arrange the following in ascending order of wave length.
1) Gama rays
2) x-ray, is
3) Infra-red ray,
4) microwave,

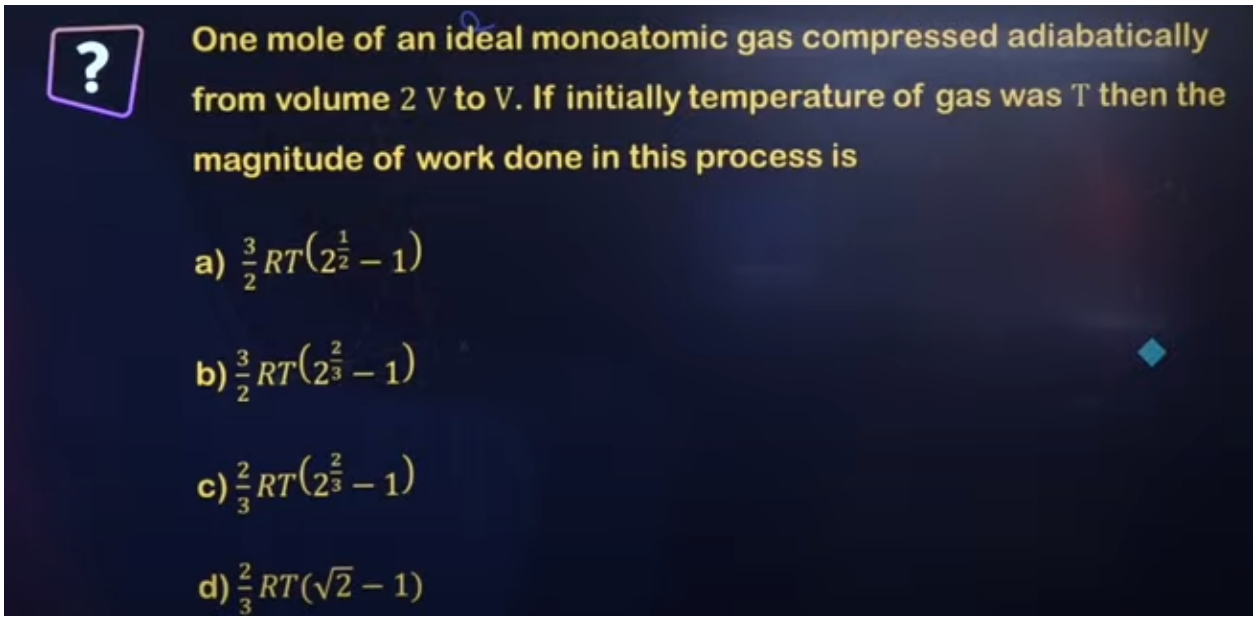
16.


The ratio of with of slits in a YDSE is 16:1.
Find the ratio of max to min Intensities formed

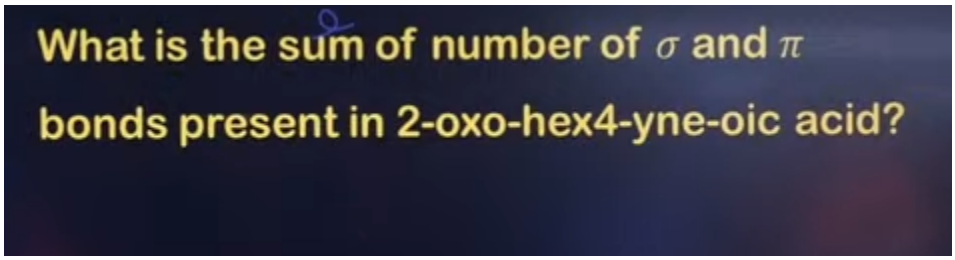
17.


A 2 kg brick is placed on an inclined plane of inclination 45°. The brick is at rest. The minimum coefficient of static friction is:
(a) 0.5
(b) $\sqrt{3}$
(C) 1
(d) $\frac{1}{\sqrt{3}}$

18.


One mole of an ideal monoatomic gas compressed adiabatically from volume 2 V to V. If initially temperature of gas was T then the magnitude of work done in this process is
a) $\frac{3}{2}RT(2^{\frac{1}{2}}-1)$
b) $\frac{3}{2}RT(2^{\frac{2}{3}}-1)$
c) $\frac{2}{3}RT(2^{\frac{2}{3}}-1)$
d) $\frac{2}{3}RT(\sqrt{2}-1)$

19.


What is the sum of number of σ and π bonds present in 2-oxo-hex4-yne-oic acid?

20.

Calculate heat for Isothermal process if expansion occurs from 20L to 60L against 5Atm external pressure

21.

? a, b, c are in AP, $a+3, b, c+2$ are in G.P, $a > 10$, Then then Arithmetic mean of a, b, c is 8 then cube of Geometric mean.

22.

Let $f(x) = \int_0^x (t + \sin(1 - e^t))dt, x \in R$. Then; $\lim_{x\to 0} \frac{f(x)}{x^3}$ is equal to

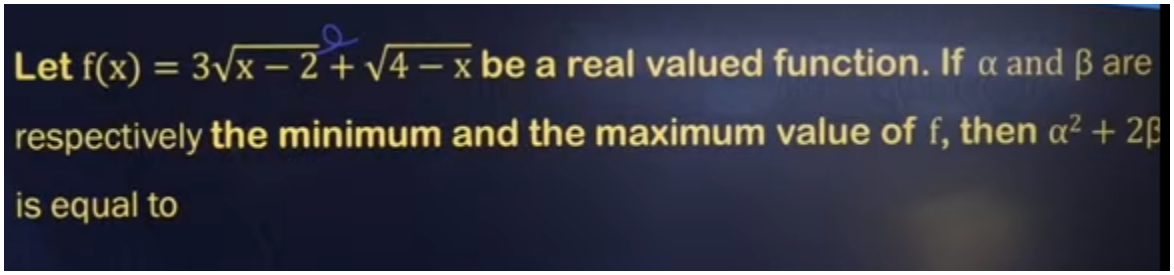
23.

For $\lambda > 0$, Let θ be the angle between the vectors

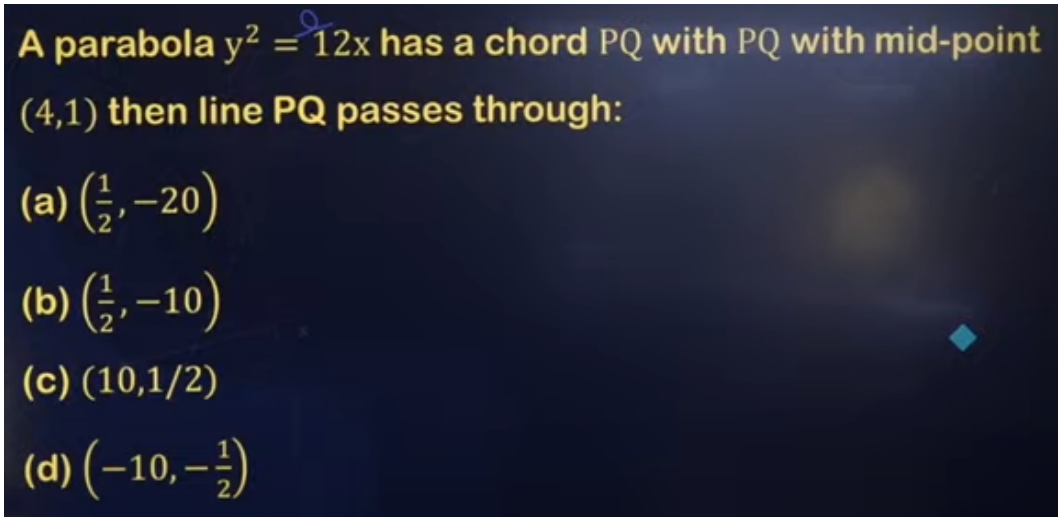
$\vec{a} = \hat{i} + \lambda\hat{j} - 3\hat{k}$ and $\vec{b} = 3\hat{i} - \hat{j} + 2\hat{k}$.

If the vector $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ are mutually perpendicular, then the value of $(14\cos\theta)^2$ is equal to -

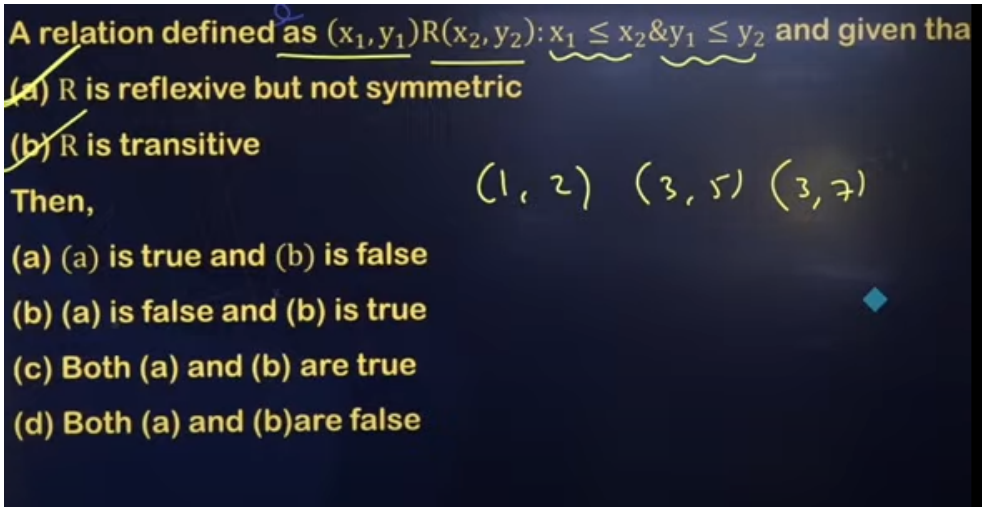
24.


Let $f(x) = 3\sqrt{x-2} + \sqrt{4-x}$ be a real valued function. If α and β are respectively the minimum and the maximum value of f, then $\alpha^2 + 2\beta$ is equal to

25.


A parabola $y^2 = 12x$ has a chord PQ with PQ with mid-point $(4,1)$ then line PQ passes through:
(a) $\left(\frac{1}{2}, -20\right)$
(b) $\left(\frac{1}{2}, -10\right)$
(c) $(10,1/2)$
(d) $\left(-10, -\frac{1}{2}\right)$

26.


A relation defined as $(x_1, y_1)R(x_2, y_2): x_1 \leq x_2 \& y_1 \leq y_2$ and given tha
(a) R is reflexive but not symmetric
(b) R is transitive
Then,
(1, 2) (3, 5) (3, 7)
(a) (a) is true and (b) is false
(b) (a) is false and (b) is true
(c) Both (a) and (b) are true
(d) Both (a) and (b)are false