# JEE Main 2024 Question Paper April 9 Shift 2 (B.E./B.Tech)

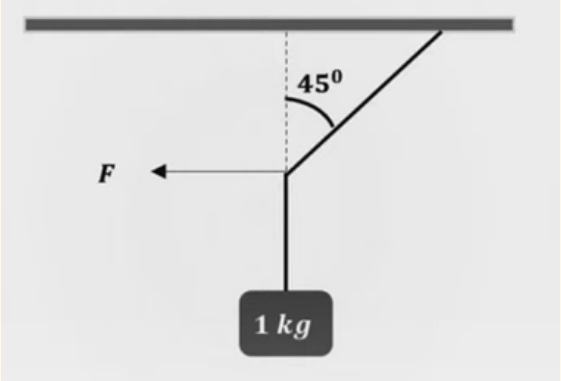
## JEE Main Physics Questions

**Ques 1. Dimensional formula of Plank's constant is:**

**A. $[M^2L^2T^{-1}]$**
**B. $[M^1L^2T^{-1}]$**
**C. $[M^2L^2T^{-2}]$**
**D. $[ML^2T^{-3}]$**

**Ans.** B

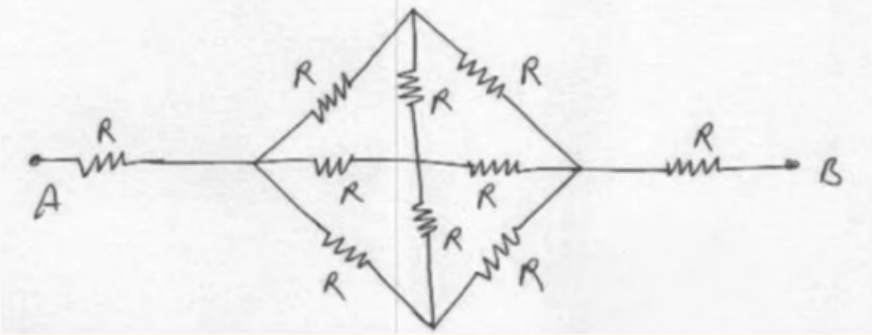
**Ques 2. Find the magnitude of force F, if the given system is in equilibrium**




**A. 10 N**
**B. 10√2 N**
**C. 0 N**
**D. 1 / 10√2 N**

**Ans.** A

**Ques 3. The equivalent resistance between terminal A and B in the network shown**




**A. 4R/3**
**B. 8R/3**
**C. 3R**
**D. 5R/2**

**Ans.** B

**Ques 4. The nuclei at rest breaks into two parts with mass ratio 1 : 2. The ratio of their velocity and direction is**

**A. Opposite Direction 2 : 1**
**B. Same Direction 1 : 2**
**C. Opposite Direction 1:1**
**D. Same Direction 1 : 1**

**Ans.** A

**Ques 5. Two cars A and B are mobbing towards each other with speed 20 m/s each. When 300 m apart, they both apply breaks which causes deceleration of 2 m/s$^2$. The distance between them when they stop will be:**

**A. 100 m**
**B. 50 m**
**C. 150 m**
**D. 200 m**

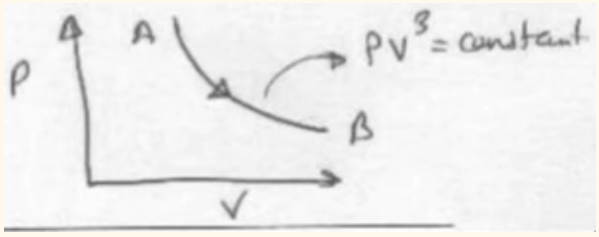
**Ans.** A

**Ques 6. For a wire, the original resistance was 50 Ω at the initial temperature of 27° C. When the temperature is increased, its resistance becomes 62 Ω. If the thermal coefficient of resistivity of the wire is 2.4 x $10^{-2}$ $K^{-1}$, find the final temperature.**

**A. 45° C**
**B. 37°C**
**C. 48°C**
**D. 32° C**

**Ans.** B

**Ques 7. Find the work done by a monoatomic gas from A and B. Here the temperature of gas (1 mol) changes from 300 K to 330 K.**




**A. 125 J**
**B. 250 J**
**C. 500 J**
**D. 6250 J**

**Ans.** A

**Ques 8. Two bubbles having radii rA and rB are having excess pressure PA and PB in them. If PA = 3PB, find rA/rB**

**A. 9: 1**
**B. 1:9**
**C. 1:3**
**D. 3 : 1**

**Ans.** C

**Ques 9. In the given ray diagram, find the distance (in cm) between the two convex lenses.**


**Ans.** 25

**Ques 10. Find the work done (in J) by force $F = 3x^2 + 2x - 5$ in moving a particle x = 2 to x = 4.**

**Ans. 58**

## JEE Main Chemistry Questions

**Ques 1. Correct order of bond angle of following compounds is: $BF_3$, $PF_3$, $ClF_3$**

A. $BF_3 > PF_3 > ClF_3$
B. $PF_3 > ClF_3 > BF_3$
C. $ClF_3 > PF_3 > BF_3$
D. $BF_3 > ClF_3 > PF_3$

**Ans.** A

**Ques 2. Identify the correct electronic configuration of Einsteinium is**

A. $[Rn]5f^{14}6d^{17}s^2$
B. $[Rn]5f^{11}7s^2$
C. $[Rn]5f^{10}6d^{1}7s^2$
D. $[Rn]5f^{11}6d^{1}7s1$

**Ans.** B

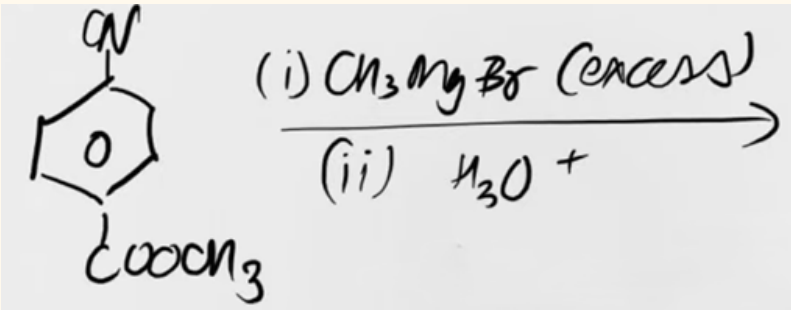
**Ques 3. $Ca^{2+}$ makes which type of complex with EDTA**

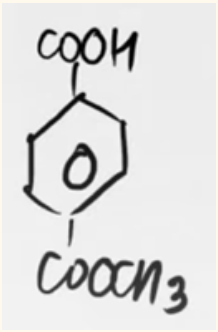
A. Trigonal bipyramidal
B. Square Planer

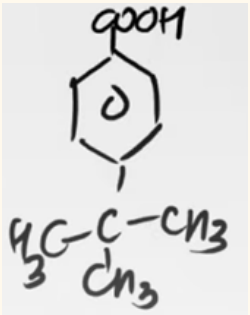
**C. Tetrahedral**
**D. Octahedral**

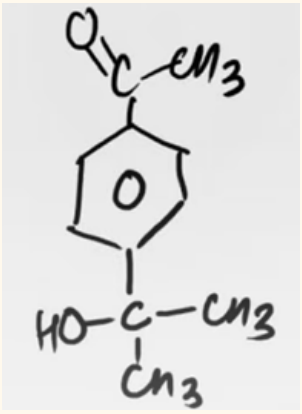
**Ans.** D

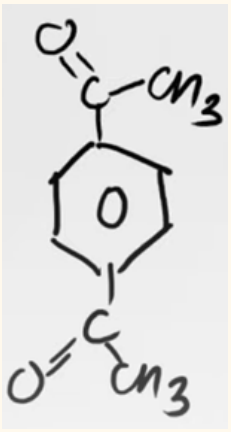
**Ques 4. The product obtained in the following reaction is:**




A. 


B. 

C. 

D. 

**Ans.** C

**Ques 5. Fuming sulphuric acid has how many oxygen atoms?**

**Ans.** 7

**Ques 6. Total sum of number of electrons in π* orbitals of $O_2$, $O_2^+$ and $O_2^-$ is:**

**Ans.** 6

---