

# JEE Main 2023 Question Paper with Answer Key April 13 Shift 2 (Memory-based)

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## JEE Main 2023 Physics Question Paper

**Question 1.** What should be the minimum size of antenna required for successful transmission of wave having wavelength  $\lambda$

- A.  $2\lambda$
- B.  $\lambda/4$
- C.  $\lambda/2$
- D.  $\lambda$

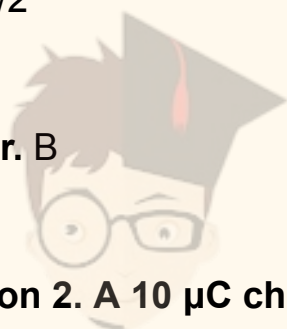
**Answer.** B

**Question 2.** A  $10 \mu\text{C}$  charge is divided into two equal parts and kept at 1 cm distance. Find repulsion between charges?

- A. 225 N
- B. 450 N
- C. 2250 N
- D. 4500 N

**Answer.** C

**Question 3.** Two identical trains cross each other moving on parallel tracks, opposite in direction. Speed of one of the train is 70 km/hr and the second train has a speed of 110 km/hr. If it takes 8 s for two trains to cross each other then length of trains is equal to?



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- A. 100 m
- B. 200 m
- C. 300 m
- D. 400 m

**Answer. B**

**Question 4. A bi-convex lens of focal length 10 cm is cut perpendicularly to principal axis. Find power (in D) of new lens.**

**Answer. 5D**

**Question 5. A particle is performing S.H.M whose distance from mean position varies as  $x = A\sin(\omega t)$ . Find the position of the particle from the mean position, where kinetic energy and potential energy is equal.**

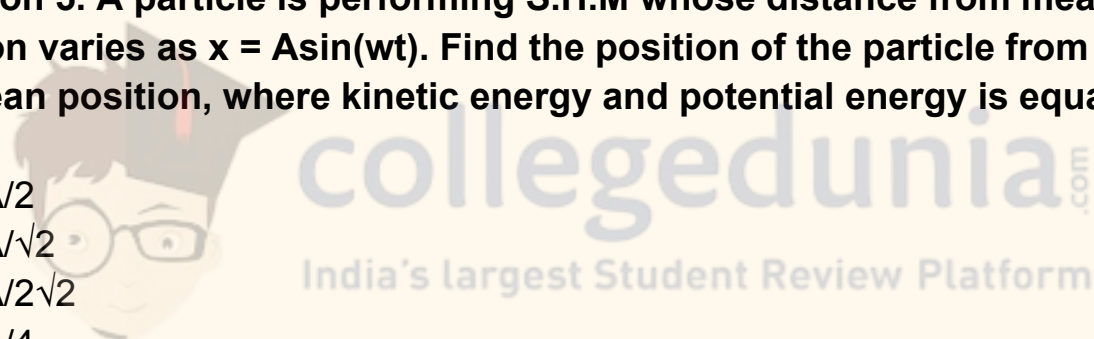
- A.  $A/2$
- B.  $A/\sqrt{2}$
- C.  $A/2\sqrt{2}$
- D.  $A/4$

**Answer. B**

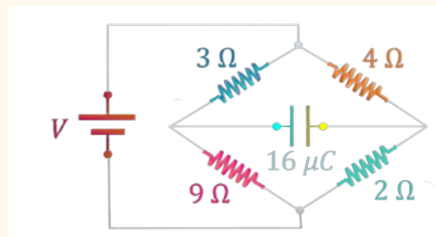
**Question 6. An electron is moving along positive x direction in xy plane, magnetic field points in negative z direction, then the force due to magnetic field on electron points in the direction**

- A. j
- B. -j
- C. k
- D. -k

**Answer. B**



**Question 7. Find the energy stored in the capacitor in a given circuit.**

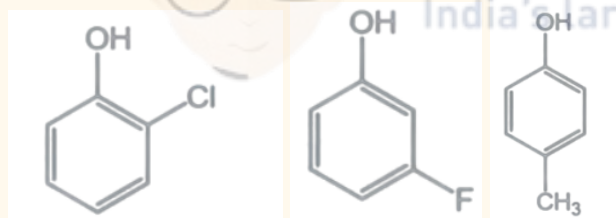


- A. 0.2 mJ
- B. 0.4 mJ
- C. 0.6 mJ
- D. 0.8 mJ

**Answer. 2**

## JEE Main 2023 Chemistry Question Paper

**Question 1. Assertion (A): Acidic nature follows the order:**



**Reason (R): F is better electron withdrawing group than Cl**

- A. (A) and (R) both are correct, and (R) is the correct explanation of (A)
- B. (A) and (R) both are correct, but (R) is not the correct explanation of (A)
- C. (A) is correct but (R) is not correct
- D. (A) is incorrect but (R) is correct

Answer. B

Question 2. Consider the reaction  $\text{Cr}_2\text{O}_7^{2-} + x\text{H}^+ + \text{Fe}^{2+} \rightarrow y\text{Fe}^{3+} + 2\text{Cr}^{3+} + z\text{H}_2\text{O}$  Sum  $x, y, z$ ?

Answer. 27

Question 3. If the formula of borax is  $\text{Na}_2\text{B}_4\text{O}_x(\text{OH})_y \cdot z\text{H}_2\text{O}$ , Find the value of  $x + y + z$ ?

Answer. 17

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### JEE Main 2023 Mathematics Question Paper

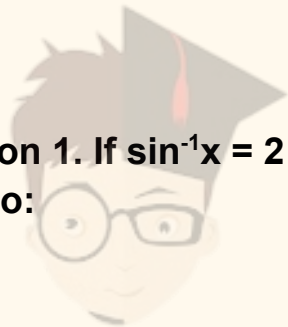
Question 1. If  $\sin^{-1}x = 2 \tan^{-1}x$ , then number of integral values of  $x$  is equal to:

- A. 0
- B. 1
- C. 2
- D. More than 2

Answer. D

Question 2. If  $x^2 - \sqrt{2}x + 2 = 0$  has roots  $\alpha$  and  $\beta$  then  $\alpha^{14} + \beta^{14}$  is:

- A. -256
- B. -128



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- C.  $-128\sqrt{2}$
- D.  $-256\sqrt{2}$

**Answer. B**

**Question 3.**  $(2x^3 - 1/3x^8)^5 \rightarrow$  coefficient of  $x^4$

**Question 4.** Find out the rank of MONDAY.

**Answer. 327**



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