

JEE Main 2023 Question Paper with Answer Key

April 10 Shift 1 (Memory-based)

JEE Main 2023 Physics Question Paper

Question 1. An object is placed in Front of a plane mirror 12 cm away from it. The object is kept fixed while the plane mirror is shifted towards the object by a distance of 4 cm. The length of shift in the position of the image is equal to _____ cm.

Answer. 8 cm

Question 2. Statement (1): An LCR circuit connected to an AC source has maximum average power at resonance.

Statement (2): A resistor only circuit with zero phase difference has maximum average power.

- A. (1) and (2) both are correct
- B. (1) is correct but (2) is incorrect
- C. (1) is incorrect but (2) is correct
- D. Both (1) and (2) are incorrect

Answer. A

Question 3. An point sized object is placed 4 cm from the double convex lens of focal length 8 cm. The change in the position of the image, when the object is moved 2 cm towards the lens, is?

- A. 8
- B. $8/3$

- C. $16/3$
- D. $32/3$

Answer. C

Question 4. The equation of progressive wave is $y=5\sin(6t + 0.03x)$. Find the speed of wave

Answer. 200

Question 5. For an object radiating heat at 300 K, the wavelength corresponding to maximum intensity is λ . If the temperature of body is increased by 300 K, the new wavelength corresponding to maximum intensity will be

- A. $\lambda/2$
- B. 2λ
- C. λ
- D. $5\lambda/2$

Answer. A

Question 6. Earth shrinks to $1/64$ times of its initial volume. Time period of Earth rotation is found to be $24/x$ hrs. Find the value of x.

Answer. 16

Question 7. Find the equivalent capacitance across points A and B in the given electric circuit.

- A. $C/2$
- B. $2C$
- C. $5C/3$
- D. $3C/4$

Answer. B

Question 8. An object weighs 200N at the surface of earth. Find the weight at a depth of $R/2$, where R is radius of earth

- A. 100N
- B. 300N
- C. 50N
- D. 150N

Answer. A

Question 9. A particle, when projected at 15° horizontally, has a range of 50 m. Find the range when projected at 45° with horizontal.

- A. 50 m
- B. 100 m
- C. 80 m
- D. 120 m

Answer. B

Question 10. A particle of mass m moving with a velocity v collides with a particle of mass $2m$ at rest and sticks to it. Velocity of the combined mass equal to?

- A. v
- B. $v/2$
- C. $v/3$
- D. $v/4$

Answer. C

JEE Main 2023 Chemistry Question Paper

Question 1. One which does not stabilize secondary and tertiary protein?

- A. H-H linkage
- B. S-S linkage
- C. Vanderwoal's force
- D. Hydrogen bonding

Answer. A

Question 2. Stabilizer used for concentrating sulphide ore

- A. Fatty acids
- B. Pine oil
- C. Cresol
- D. Xanthates

Answer. C

Question 3. Which of the following is diamagnetic with low spin?

- A. $[\text{Co}(\text{NH}_3)_6]^{3+}$
- B. $[\text{CoF}_6]^{3-}$
- C. $[\text{CoCl}_6]^{3-}$
- D. $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$

Answer. A

Question 4. The compound which does not exist.

- A. BeCl_2
- B. NaO_2
- C. PbEt_4
- D. $(\text{NH}_4)_2 \text{BeF}_4$

Answer. B

Question 5. Number of molecules and moles in 2.8375 litre of O_2 at STP.

Answer. Number of moles = 0.1266 moles

Number of molecules = 0.7625×10^{23}

Question 6. Select the correct option :



Then ΔH for , $\text{C (graphite)} + \frac{1}{2} \text{O}_2 \text{ (g)} \rightarrow \text{CO (g)} :$

- A. $x - y/2$

- B. $x - 2y / 2$
- C. $x + 2y / 2$
- D. $x - y / 2$

Answer. B

Question 7. The Sum of number of lone pairs in central atom in IF_5 and IF_7 is:

Answer. 1

Question 8. Enthalpy of adsorption and enthalpy of formation of micelle are respectively

- A. Positive, Positive
- B. Positive, Negative
- C. Negative, Positive
- D. Negative, Negative

Answer. C

**Question 9. How many of the following are bent in shape?
 SO_2 , O_3 , I_3^- , N_3^-**

Answer. 2

Question 10. The pressure value of a gas is 930.2 mm Hg. The volume is then reduced to 40% of its initial value at a constant temperature. Then what is the final pressure (in mmHg)

Answer. 2325.5 mmHg

Question 11. Prolonged heating of ferrous ammonium sulphate is avoided to prevent :

- A. Oxidation
- B. Reduction
- C. Hydrolysis
- D. Breaking

Answer. A

Question 12. Read the following two statements.

Statement I : Potassium dichromate is used in volumetric analysis.

Statement II : $K_2Cr_2O_7$ is more soluble in water than $Na_2Cr_2O_7$

- A. Both statements I and II are correct.
- B. Both statements I and II are incorrect.
- C. Statement I is correct and II is incorrect
- D. Statement I is incorrect and II is correct.

Answer. C

Question 13. The degree of dissociation of monobasic acid is 0.3. By what percent is the observed depression in freezing point greater than the calculated depression in freezing point ?

Answer. 30

JEE Main 2023 Mathematics Question Paper

Question 1. Find the number of integral values of x which satisfy the inequality $x^2 - 10x + 19 < 6$.

- A. 5
- B. 11
- C. 7
- D. 8

Answer. C

Question 2. 3, 8, 13,, 373 are in arithmetic series. The sum of numbers not divisible by three is

- A. 9310
- B. 8340
- C. 9525
- D. 7325

Answer. 9525

Question 3. Using the number 1, 2, 3 ... 7, total numbers of 7 digit number which does not contain string 154 or 2367 is (Repetition is not allowed)

- A. 4897
- B. 4898
- C. 4896
- D. 4899

Answer. B

Question 4. If the coefficient of x^7 in expansion of $(ax - 1/bx^2)^{13}$ is equal to the coefficient of x^{-5} in expansion of $(ax + 1/bx^2)^{13}$, then a^4b^4 is?

Answer. 22

Question 5. From a square of side 30 cm the squares of side x cm is cut off to make a cuboid of maximum volume. The surface area of cuboid with open top is?

- A. 400 cm^2
- B. 464 cm^2
- C. 800 cm^2
- D. 900 cm^2

Answer. C

Question 6. If the number of ways in which a mixed double badminton can be played such that no couples played into a same game is 840. Then find the number of players?

Answer. 16

Question 7. The coefficient of x^7 in $(1 - 2x + x^3)^{10}$ is?

- A. 5140
- B. 2080
- C. 4080
- D. 6234

Answer. C

Question 8. The mean of the data

0-10	10-20	20-30	30-40	40-50
5	2	5	x	6

is 26 , then variance of the data is?

Answer. 815

Question 9. Two dice are rolled and sum of numbers of two dice is N then probability that $2^N < N!$ is m/n , where m and n are co-prime, then $11m - 3n$ is?

Answer. 85

Question 10. If the order of matrix A is 3×3 and $|A| = 2$, then the value of $|3adj (|3A|A^2)|$ is?

- A. $3^{10} \cdot 2^{21}$
- B. $2^{10} \cdot 3^{21}$
- C. $2^{12} \cdot 3^{15}$
- D. $3^{12} \cdot 2^{15}$

Answer. B