

JEE Main 2023 Question Paper with Answer Key April 8 Shift 1 (Memory-Based)

JEE Main 2023 Physics Question Paper

Question 1. For an electron and a proton ($m_p = 1847 m_e$) with same de-broglie wavelength , the ratio of linear momentum is equal to?

- A. 1:2
- B. 2:1847
- C. 1:1
- D. $\sqrt{1847}:1$

Answer. C

Question 2. Two forces of magnitude A and A/2 act perpendicular to each other. The magnitude of the resultant force is equal to:

- A. A/2
- B. $\sqrt{5} A / 2$
- C. 3 A/2
- D. 5 A/2

Answer. B

Question 3. If the weight of an object on earth's surface is 400 N, then weight of the same particle at a depth R/2 from surface would be (R is radius of earth)

- A. 100 N
- B. 300 N
- C. 200 N

D. 250 N

Answer. C

Question 4. Two projectiles u_1 and u_2 , with speed of 40 m/s and 60 m/s respectively are thrown at a certain angle, u_1 with 30° and u_2 with 60° , what is the ratio of range?

Answer. 4/9

Question 5. An air bubble having volume 1 cm^3 at depth 40 m inside water comes to the surface. What will be the volume of the bubble at the surface?

- A. 5 cm^3
- B. 2 cm^3
- C. 4 cm^3
- D. 3 cm^3

Answer. A

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Question 6. The height of the antenna is 98 m. The radius of Earth is 6400 km. The area up to which it will transmit signal is:

- A. 3642 km^2
- B. 3942 km^2
- C. 11200 km^2
- D. 22400 km^2

Answer. B

Question 7. If mass, radius of cross-section and height of a cylinder are $(0.4 + 0.01)$ g, $(6 + 0.03)$ m and height $(8 + 0.04)$ m. The maximum percentage error in the measurement of density of cylinder is?

- A. 1%
- B. 4%
- C. 8%
- D. 7%

Answer. B

Question 8. If the velocity of a charged particle has the component both in and perpendicular to the direction of the magnetic field then the path traced by the charged particle will be?

- A. Circular
- B. Straight line
- C. Cycloid
- D. Helical

Answer. D

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Question 9. Two different lenses are used in telescope because

- A. Magnification is increased
- B. Focal length is increased
- C. More light is captured
- D. Spherical aberration is increased

Answer. A

Question 10. A train is moving with a speed of 10 m/s towards a platform and blows a horn with frequency 400 Hz. Find the frequency heard by a passenger standing on the platform. Take speed of sound = 310 m/s.

- A. 405 Hz
- B. 425 Hz
- C. 380 Hz
- D. 413 Hz

Answer. D

JEE Main 2023 Chemistry Question Paper

Question 1. $\text{XeF}_4 + \text{SbF}_5 \rightarrow [\text{XeF}_m]^{+n} [\text{SbF}_p]^{q-}$. Find the value of $m + n + p + q$?

Answer. 11

Question 2. Extraction of which one of the following metals involves concentration of the ore by leaching?

- A. Copper
- B. Magnesium
- C. Aluminum
- D. Potassium

Answer. C

Question 3. How many factors will contribute to a major role in covalent character of a compound.

1. Polarising power of cation
2. Polarisability of the anion
3. Distortion caused by cation
4. Polarisability of cation

- A. 1 and 2
B. 2 and 3
C. 1, 2, and 3
D. 4

Answer. C

**Question 4. Consider the reaction $\text{Cu}^{2+} + \text{X}^- \rightarrow \text{Cu}_2\text{X}_2 + \text{X}_2$
 X_2 will be predominantly?**

- A. Cl_2
B. Br_2
C. I_2
D. All halogens are possible

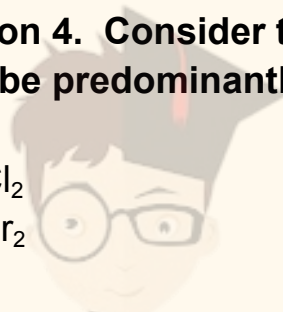
Answer. C

Question 5. Read the following two statements

Statement I: Ionic radius of Li^+ is greater than Mg^{++}

Statement II: Lithium and magnesium can't form superoxide

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



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Answer. A

Question 6. Which of the following elements is most reactive?

- A. Ca
- B. Mg
- C. Sr
- D. K

Answer. D

Question 7. Select the correct order of electronegativity of the elements : B, C, At, S

- A. $B > C > S > At$
- B. $S > C > B > At$
- C. $C > B > S > At$
- D. $S > C > At > B$

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Answer. D

Question 8. 0.5 gm of an organic compound with 60% Carbon produce _____ gm of CO₂ upon complete combustion

Answer. 1.10

**Question 9. How many of the following- amino acids contain sulphur?
Lysine ; Methionine; Glutamic acid; Threonine
Arginine; Cysteine; Tyrosine; Isoleucine**

Answer. 2 (Methionine and Cysteine)

Question 10. How many statements are correct:

1. If there is no relation between rate constant and temperature, then activation energy is negative.
2. If the activation energy is zero, rate constant is temperature independent.
3. If rate constant increases with increase of temperature, activation energy is positive.
4. If rate constant decreases with increase in temperature, activation energy is negative.

- A. 1 and 2
B. 2 and 3
C. 2, 3, and 4
D. 4

Answer. C

JEE Main 2023 Mathematics Question Paper

Question 1. Consider the word INDEPENDENCE. The number of words such that all the vowels are together is?

- A. 16800
B. 15800
C. 17900
D. 14800

Answer. A

Question 2. Shortest distance between lines $(x - 5) / 4 = (y - 3) / 6 = (z - 2) / 4$ and $(x - 3) / 7 = (y - 2) / 5 = (z - 9) / 6$ is ?

- A. $190/37$
- B. $190/\sqrt{756}$
- C. $37/190$
- D. $756/\sqrt{190}$

Answer. B

Question 3. 7 boys and 5 girls are to be seated around a circular table such that no two girls sit together is?

- A. $126(5!)^2$
- B. $720(5!)$
- C. $720(6!)$
- D. 720

Answer. A

Question 4. Coefficient independent of x in the expansion of $(3x^2 - 1/2x^5)^7$ is ?

- A. $5103/4$
- B. $5293/6$
- C. $6715/3$
- D. $7193/4$

Answer. A

Question 5. If the coefficients of three consecutive terms in the expansion of $(1 + x)^n$ are in the ratio $1 : 5 : 20$, then the coefficient of the fourth term of the expansion is?

- A. 3654
- B. 3658
- C. 3600

D. 1000

Answer. A

Question 6. A bolt manufacturing factory has three products A, B and C. 50% and 30% of the products are A and B type respectively and remaining are C type. Then probability that the product A is defective is 4%, that of B is 3% and that of C is 2%. A product is picked randomly and found to be defective, then the probability that it is type C.

- A. $\frac{4}{33}$
- B. $\frac{1}{33}$
- C. $\frac{2}{33}$
- D. $\frac{9}{33}$

Answer. A



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Question 7. Maximum value n such that $(66)!$ is divisible by 3^n

Answer. 31

Question 8. Check whether the function $f(x) = \frac{(1+2^x)^7}{2^x}$ is?

- A. Even
- B. Odd
- C. Neither even nor odd
- D. None of these

Answer. C

Question 9. A has 5 elements and B has 2 elements. The number of subsets of $A \times B$ such that the number of elements in subset is more than or equal to 3 and less than 6, is?

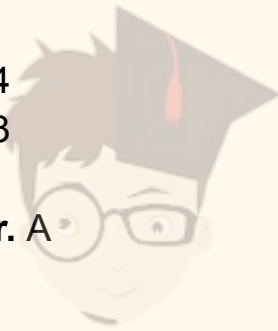
- A. 602
- B. 484
- C. 582
- D. 704

Answer. C

Question 10. Consider the data : $x, y, 10, 12, 4, 6, 8, 12$. If mean is 9 and variance is 9.25, then the value of $3x - 2y$ is ($x > y$)

- A. 25
- B. 1
- C. 24
- D. 13

Answer. A



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