JEE Main 2024 Question Paper Jan 31 Shift 2 (B.E./B.Tech)

JEE Main Physics Questions

Ques 1. The speed of sound in oxygen in STP will be approximately? Given that R=8.3 and y=1.4
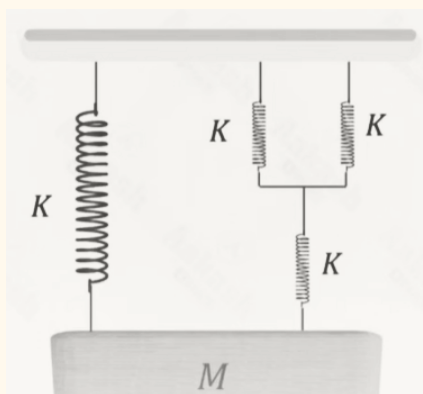
Ans. 330.05 m/s

Ques 2. By what % will the illumination of lamp decreases If the current drops by 20%

Ans. 36%

Ques 3. Mass of the moon is 1/100 times the mass of a planet. Its diameter is 1/16 the diameter of the planet if the escape velocity of the planet is V then the escape velocity of the moon will be

Ans. V/3

Ques 4. The period of oscillation of system shown below is $\pi\sqrt{(\alpha M/5K)}$ then α is

Ans. 12

Ques 5. For the block shown, F_1 is the minimum force required to move block upward and F_2 is the minimum force required to prevent it from slipping find $|F_1 - F_2|$

    A. 50 sqrt(3) N

    B. 5sqrt(3) N

    C. 25 sqrt(3) N

    D. (5sqrt(3))/2 N

Ans. B

Ques 6. Unpolarised light incident on transparent glass at incident angle 60°. If reflected ray is completely polarized, then angle of refraction is
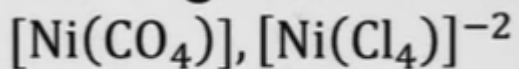
    A. 45°

    B. 60°

    C. 30°

    D. 37°

Ans. C

JEE Main Chemistry Questions

Ques 1. Which of the following is least iconic

    A. BaCl2

    B. KCl

    C. AgCl

    D. CoCl2

Ans. D

Ques 2. Select the option of the correct property Paramagnetic &

$$[Ni(CO_4)], [Ni(Cl_4)]^{-2}$$

Diamagnetic

Ans. Diamagnetic, Paramagnetic

Ques 3. Number of isomeric products formed by monochlorination Of 2-methyl butane in presence of sunlight is

Ans. 6

Ques 4. From the vitamins A, B-1, B-6, B-12, C, D, and K, the number of vitamins that can be stored in our body is

Ans. 3

Ques 5. If 5 moles of an ideal gas expands from 10 L to a volume of 100 L at 300k under isothermal and reversible condition then work, W, is - x J. The value of x is (even n = 8.314 J K-¹ mol-¹)

Ans. 2.303

Ques 6. Statement I: So disproportionates into $H_2S_2O_3$ and S_2^- in alkaline medium
Statement II: ClO_4^- undergoes disproportionation in acidic medium
    A. Statement I is correct but Statement II is incorrect
    B. Statement I is incorrect but Statement II is correct
    C. Both Statement I and Statement II are correct
    D. Both Statement I and Statement II are incorrect

Ans. A

Ques 7. A compound (x) with molar mass 108 g mol-1 undergoes acetylation to give product with molar mass 192 g mol-1

Ans. 2

Ques 8. Half life of a first order reaction is 36hr. Find out time (in hour) required for concentration of reactant to get reduced by 90%.

Ans. 120

JEE Main Mathematics Questions

Ques 1. Let $f: \to R \to (0, \infty)$ be increasing function such that $Lt_{x\to\infty} \frac{f(7x)}{f(x)} = 1$ then $lt_{x\to\infty} \left\{ \frac{f(5x)}{f(x)} - 1 \right\}$ is equal to

A. 0
B. 4
C. 1
D. $\frac{4}{5}$

Ans. A

Ques 2. $z_1^3 + z_2^3 = 20 + 15i$ then $\left| z_1^4 + z_2^4 \right|$ is equal to

A. $15\sqrt{15}$
B. 75
C. $30\sqrt{3}$
D. $25\sqrt{3}$.

Ans. B

Ques 3. $a = \sin^{-1}(\sin(5))$ and

$b = \cos^{-1}(\cos(5))$ then $a^2 + b^2 =$

Ans. $8\pi^2 - 40\pi + 50$

Ques 4. A coin is biased so that a head is twice as likely as a tail. If the coin is tossed 3 times, then the probability of getting two tails and one head is

    A. 1/9
    B. 2/9
    C. 2/27
    D. 1/27

Ans. B

Ques 5. The number of solution of equation e sinx - 2e -sinx = 2 is

    A. more than 2
    B. 2
    C. 1
    D. 0

Ans. D