JEE Main 2024 Question Paper Jan 27 Shift 2 (B.E./B.Tech)

JEE Main Physics Questions

Ques 1. Does kinetic friction and static friction depend on surface of contact and material of surface.

A. only on surface
B. only on material
C. both material on surface
D. None of these

Ans. B

Ques 2. If the work function of a metal is 6.63 eV, then find the threshold frequency for photoelectric effect.

A. 1.9×10^{15} Hz
B. 1.6×10^{15} Hz
C. 2×10^{16} Hz
D. 1.2×10^{15} Hz

Ans. B

Ques 3. If $(p- a/V^2) (V - b) = nRT$ where P ,V ,R & T are pressure, volume, universal gas constant and temperature, then a/b^2 has same dimensional formula as that of

A. R
B. PV

C. RT
D. P

Ans. D

Ques 4. Assertion : angular velocity of moon revolving about earth is more than angular velocity of earth revolving around Sun.
Reason: Time taken by moon to revolve around earth is less than time taken by earth to revolve around sun.

A. Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
B. Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
C. Assertion (A) is true and Reason (R) is false.
D. Assertion (A) is false and Reason (R)

Ans. A

Ques. 5 Statement 1: Positive zero error is added in measured value.

Statement 2: Defect may occur during manufacturing of measuring instruments

A. Statement 1 is true while statement 2 is false
B. Statement 1 is false while Statement 2 is true
C. Both statements are true
D. Both statements are false

Ans. B

Ques 6. Find total kinetic energy of 1 mole of oxygen gas at 27° C (Take R = 25/3 J/(mol - K)

A. 6250 J

B. 3125 J
C. 12500 J
D. 625 J

Ans. A

JEE Main Chemistry Questions

Ques 1. The quantity which changes with temperature:

A. Mole fraction
B. Mass Percentage
C. Molarity
D. Molality

Ans. C

Ques 2. Which of the following can not act as an oxidising agent?

A. $Mn04^{-}$
B. $SO.2^{-}$
C. N^{3-}
D. BrO^{3-}

Ans. C

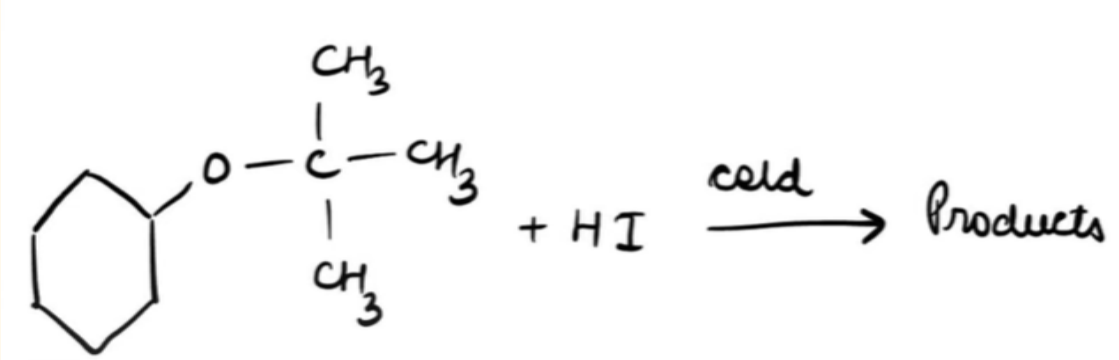
Ques 3. Phenolic group can be identified by a positive

A. Lucas test
B. Carbylamine test
C. Phthalein test

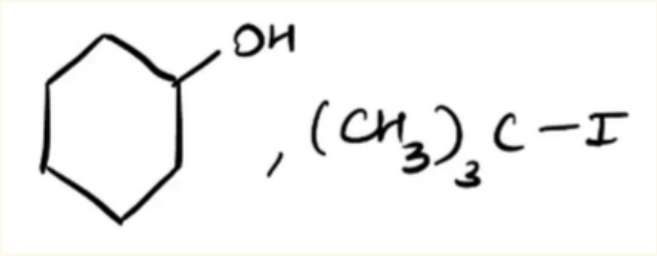
D. Tollen's test

Ans. C

Ques 4. Products for the below reaction are:



A.



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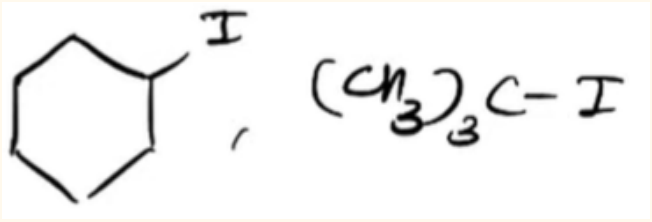
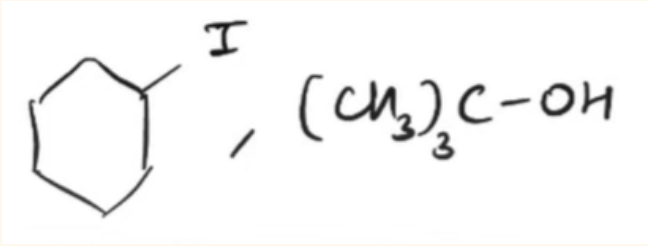


C.



Ans. A

Ques 5. Which type of protein can not be denatured when heated

A. Primary
B. Secondary
C. Tertiary
D. Quaternary

Ans. A

Ques 6. Identify the following species in which d^2sp^3 hybridization is shown by the central atom.

A. BrF_5
B. SF_6
C. $[Co(NH_3)_6]^{3+}$
D. $[PtCl_4]^{2-}$

Ans. C

Ques 7. Which structure of protein is intact after coagulation of egg white on boiling?

A. Primary
B. Secondary
C. Tertiary
D. Quaternary

Ans. A

Ques 8. The molecular formula of second homologue in the homologous series of monocarboxylic acid is

A. CH3COOH
B. CH3CH2COOH
C. CH3CH(CH3)COOH

D. $CH_3CH_2CH_2COOH$

Ans. A

Ques 9. In which of the options, all the elements have d10 configuration in their ground state

A. Cu, Zn, Cd, Ag
B. Cd, Au, Hg, Ni
C. Sc, Ti, Fe, Zn
D. Fe, Cr, Co, Ni

Ans. A

JEE Main Mathematics Questions

Ques 1. Coefficient of x^{2012} in $(1-x)^{2008}(1+x+x^2)^{2007}$

A. 0
B. 1
C. 2
D. 3

Ans. A

Ques 2. The integral of $\int \frac{(x^8-x^2)}{(x^{12}+3x^6+1)\tan^{-1}\left(x^3+\frac{1}{x^3}\right)}dx$ **is equal to**

A. $\frac{1}{3}\ln\left|\left(\tan^{-1}\left(x^3+\frac{1}{x^3}\right)\right)\right|+C$

B. $\ln\left|\left(\tan^{-1}\left(x^3+\frac{1}{x^3}\right)\right)\right|+C$

C. $\frac{1}{6}\ln\left|\left(\tan^{-1}\left(x^3+\frac{1}{x^3}\right)\right)\right|+C$

D. $\frac{1}{9}\ln\left|\left(\tan^{-1}\left(x^3+\frac{1}{x^3}\right)\right)\right|+C$

Ans. A

Ques 3. If $2\tan^2\Theta - 5\sec\Theta = 1$ has exactly 7 solutions in $[0, n\pi/2]$ for least value of $n \in N$, then $\sum_{k=1}^{n} k/2^n$ is equal to____?

A. $9/2^9$
B. $91/2^{13}$
C. $7/2^7$
D. $11/2^{12}$

Ans. B

Ques 4. If dy/dx = (x+y-2)/(x-y), and y(0) = 2, find y(2).

A. 0
B. 2
C. e
D. e^2

Ans. A

Ques 5. If the 20th term from the end of the progression 20,19 ¼ ,18 ½ ,17 ¾ ,……, -129 ¼ is_____?

A. -120
B. -115
C. -125
D. -110

Ans. B

Ques 6 . $\int_0^{\pi} \frac{dx}{1-2a\cos x+a^2}$ **is equals to**

A. $(1 + a^2)\pi / (1- a^2)^2$
B. $\pi / (1 - a^2)$
C. $(1 - a^2)\pi / (1 + a^2)$
D. $(1 - a^2)\pi / (1 + a^2)^2$

Ans. B