

JEE Main 2024 Chemistry Question Paper April 4 Shift 2

Time Allowed :3 Hours	Maximum Marks :300	Total Questions :90
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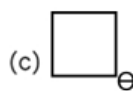
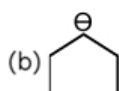
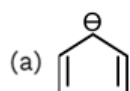
General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours duration.
2. The question paper consists of 90 questions, out of which 75 are to attempted. The maximum marks are 300.
3. There are three parts in the question paper consisting of Physics, Chemistry and Mathematics having 30 questions in each part of equal weightage.
4. Each part (subject) has two sections.
 - (i) Section-A: This section contains 20 multiple choice questions which have only one correct answer. Each question carries 4 marks for correct answer and -1 mark for wrong answer.
 - (ii) Section-B: This section contains 10 questions. In Section-B, attempt any five questions out of 10. The answer to each of the questions is a numerical value. Each question carries 4 marks for correct answer and -1 mark for wrong answer. For Section-B, the answer should be rounded off to the nearest integer

Chemistry

1. Arrange the following compounds in increasing order of their stability:



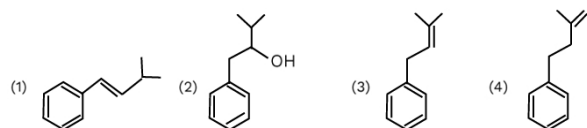
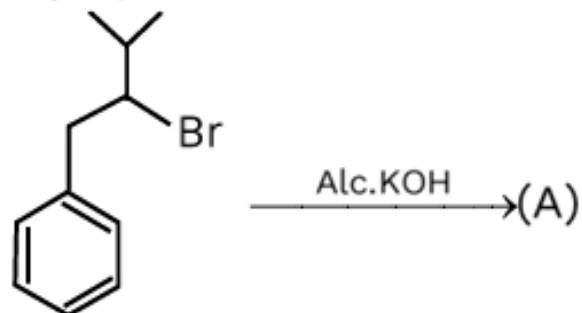
- (1) (a) > (c) > (b) > (d)
- (2) (d) > (b) > (c) > (a)
- (3) (a) > (c) > (b) > (d)
- (4) (a) > (b) > (c) > (d)

2. IUPAC name of catechol is:

- (1) Benzene, 1,2-diol
- (2) Benzene, 1,3-diol
- (3) Benzene, 1,4-diol

(4) 3-Hydroxyphenol

3. Major product 'A' is



4. Find the atomic number of the element having 3 unpaired electrons and belongs to the transition series with +2 oxidation state.

- (1) 22
 - (2) 23
 - (3) 24
 - (4) 25
-

5. Correct order of ionization enthalpy for Li, Na, Cl, F.

- (1) Cl > F > Li > Na
 - (2) F > Cl > Li > Na
 - (3) Li > Na > F > Cl
 - (4) Li > Na > Cl > F
-

6. Which of the following molecules has a pyramidal shape?

- (1) SO_4^{2-}
 - (2) SO_3^{2-}
 - (3) $\text{S}_2\text{O}_3^{2-}$
 - (4) $\text{S}_2\text{O}_7^{2-}$
-

7. Consider the following statements:

Statement I: The number of emitted photoelectrons increases with increase in frequency of incident light.

Statement II: Kinetic energy of emitted photoelectrons increases with increase in frequency of incident light.

- (1) Statement I is true but statement II is false
 - (2) Statement I is false but statement II is true
 - (3) Both Statement I and statement II are true
 - (4) Both Statement I and statement II are false
-

8. Which of the following salts forms yellowish-green gas when treated with conc. H_2SO_4 and MnO_2 ?

- (1) NaCl
 - (2) Na_2S
 - (3) Na_2SO_4
 - (4) None of these
-

9. Find the value of $x + y$ in the given complex $[\text{Fe}(\text{NH}_3)_x(\text{CN})_y]^{-1}$

10. 1 mole of ideal monoatomic gas compressed adiabatically from volume $2V$ to $1V$. If initially the temperature of the gas was T . Then the magnitude of work done in this process is:

11. Find the sum of σ and π bonds present in 2-oxo-hex-4-yne-oic acid.

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12. What is the angular momentum of the 4th orbit?

- (1) $\frac{2h}{\pi}$
 - (2) $\frac{h}{\pi}$
 - (3) $\frac{h}{2\pi}$
 - (4) $\frac{3h}{2\pi}$
-

13. Phthalimide reacts with

- (1) KOH
 - (2) Benzyl chloride
-

14. Calculate the degree of freedom for translatory and rotatory motion of CH_4 molecule.

- (1) 2,3
 - (2) 1,2
 - (3) 3,3
 - (4) 1,3
-

15. Commonly used Adsorbents in adsorption chromatography.

16. Arrange the following in ascending order of wavelength.

- (a) Gamma rays

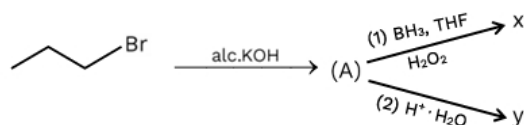
- (b) X-ray
- (c) Infrared ray
- (d) U.V. ray

- (1) $c > d > b > a$
- (2) $d > c > b > a$
- (3) $c > d > a > b$
- (4) $c > b > d > a$

17. How many orbitals have the following set of quantum numbers: $n = 4, l = 0, m_l = 0$?

- (1) 3
- (2) 5
- (3) 2
- (4) 4

18. X and Y are:



19. Calculate heat for Isothermal process if expansion takes place from 20 L to 60 L against 5 atm external pressure.

If initially temperature of gas was T. Then the magnitude of work done in this process is

- (1) 200 L-atm
- (2) 400 L-atm
- (3) 300 L-atm
- (4) 500 L-atm

20. Find the total number of molecules which have non-zero dipole moment among the following:

NH₃, BCl₃, BeH₂, CCl₄, XeF₄

21. List-I and List-II match the following:

List-I

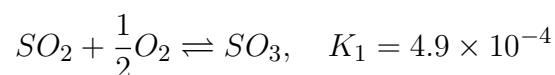
- (P) α -Glucose and α -Fructose
- (Q) α -Glucose and α -Mannose
- (R) α -Glucose and β -Glucose
- (S) α -Glucose and Ribose

List-II

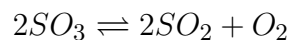
- (1) Functional group isomer
- (2) Homologous
- (3) Epimers
- (4) Anomers

- (1) P \rightarrow B; Q \rightarrow C; R \rightarrow D; S \rightarrow A
 - (2) P \rightarrow A; Q \rightarrow C; R \rightarrow D; S \rightarrow B
 - (3) P \rightarrow A; Q \rightarrow C; R \rightarrow B; S \rightarrow D
 - (4) P \rightarrow C; Q \rightarrow A; R \rightarrow D; S \rightarrow B
-

22. For the given chemical reaction:



Find K_2 for the chemical reaction given below:



- (1) 4×10^6
 - (2) 5×10^7
 - (3) 5×10^8
 - (4) 5×10^5
-

23. Total number of unpaired electrons at central metal ion in $[Co(H_2O)_6]^{3+}$

24. Arrange the following in increasing order of their first ionisation enthalpy:
Al, Ga, In, Tl, B

- (1) Tl ; In ; Ga ; Al ; B
- (2) In ; Al ; Ga ; Tl ; B
- (3) In ; Ga ; Al ; B ; Tl
- (4) B ; Al ; Ga ; In ; Tl

25. Which of the following represent correct unit of slope of graph between molar conductivity (Δm) and (conc.)^x?

- (1) S cm^{1/2} mol^{-1/2}
- (2) S cm^{3/2} mol⁻²
- (3) S cm^{7/2} mol^{-1/2}
- (4) S cm^{5/2} mol^{-3/2}

26. Which of the following statement is incorrect?

- (1) In homogeneous mixture composition is uniform
 - (2) Compounds are formed when atoms of different elements combine together in any ratio
 - (3) Atoms of same element have identical atomic mass and properties
 - (4) In heterogeneous mixture composition is not uniform
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