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PERIODIC TEST

QUESTION PAPER

Question Paper for CBSE Board, KV Schools,

State Board following NCERT Syllabus

PT 1 | PT 2

Question Paper based on NCERT Syllabus
CBSE Board Question Paper / KV Schools Question Paper

Chemistry
Class-XII (UT-II)

Max. Marks=40 Time-90 Minutes

Instructions:

(i) All questions are compulsory.

(ii) Question 1 to question 16 are objective/ competency based. Each carry 1 mark each.

Q1. Half life period of first order reaction is 20 minutes. How long will it take to 75% completion?

(a) 60 minutes (b) 80 minutes

(c) 40 minutes (d) 30 minutes

Q.2 Which of the following is not an element of first transition series.

(a) Iron (b) Chromium (c) Magnesium (d) Nical

Q.3 The number of possible isomers for the complex $Co(C_2O_4)_2(NH_3)_2$

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

Q.4 The oxidation state of nickel in Ni(CO4)

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

Q.5. When ethanol combines with PCl_5, it produces three products: chloroethane, hydrochloric acid, and _____. What is the third item on the list?

a) Phosphorus acid b) Phosphoryl chloride c) Phosphorus trichloride d) Phosphoric acid

Q.6 What is the catalyst in the chloroalkane reaction of a primary alcohol with HCl?

a) red phosphorous b) concentrated H_2SO_4

c) anhydrous $ZnCl_2$ d) pyridine

Q.7. As an electroplated protective covering, what metal is used?

a) Plutonium b) Chromium

c) Nickel d) Iron

Q.8. Which of the following is not a lanthanide property?

a) They are soft metals with a white silvery colour

b) They tarnish rapidly by air

c) The hardness of the metals increases with increase in the atomic number

d) The melting point of the metal ranges from 500-1000K

Q.9 Lanthanoid contraction is due to increase in –

(a) Effective shielding of f-elements

(b) Atomic number

(c) Effective nuclear charge

(d) Atomic radius

Q 10. If Δo < P, then the correct electronic configuration for d4 system will be

(a) t2g 4 eg 0 (b) t2g 3 eg 1 (c) t2g 0 eg 4 (d) t2g 2 eg 2

Q. 11 The hybridization state of the Cu in the compound [Cu(NH3)4]SO4 is

(a) sp3 (b) sp2 d (c) sp3 d 2 (d) ds

Q.12 Which of the following is a diamagnetic ion: (Atomic numbers of Sc, V, Mn and Cu are 21, 23, 25 and 29 respectively)

1. V2+ 2. Sc3+ 3. Cu2+ 4. Mn3+

Q.13 What is the order of reaction whose rate constant has the same unit as the rate of reaction?

Q.14 Calculate overall order of reaction which has the rate rxpression r = k [A]3/2 [B] -1

Q.15 What is the unit of rate constant for a pseudo first order reaction ?

Q.16 A reaction is first order in A. How is the rate affected if the concentration of A is reduced to half?

Q 17 In the following questions, a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the following choices.

(a) Assertion and Reason both are true, Reason is the correct explanation of Assertion. (b) Assertion and Reason both are true but Reason is not the correct explanation of Assertion. (c) Assertion is true, Reason is false. (d) Assertion is false, Reason is true.

(I) . Assertion(A) : According to crystal field theory during complex formation, the d – orbitals split and form two sets of orbitals t2g and eg.

Reason(R) : Splitting of d - orbitals occurs only in case of strong field ligands. (Ans - c)

(2). Assertion(A) : [Fe(H2O)6] 2+ is sp3 d 2 hybridised and paramagnetic complex ion.

Reason(R) : It has four unpaired electrons.

(3) Assertion(A) : Low spin tetrahedral complexes are not formed.

Reason(R) : For tetrahedral complexes, CFSE is lower than pairing energy.

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(4) Assertion(A) : [FeF6] 3- is paramagnetic.
Reason (R): F- is a weak field ligand, hence does not cause pairing of electrons.

Q.18 CASE STUDY :

The two series of inner transition elements, Lanthanoid and actinides constitute the f block of the periodic table. With the successive filling of inner orbitals, 4f, there is a gradual decrease in the atomic and iconic sizes of the metals along the series (Lanthanoid contraction). This contraction is similar to the observed in a ordinary transition series and it attributed to the same cause, the imperfect shielding on electron by another in this sub-shell due to shapes of these f- orbitals. The almost identical radii of Zr and Hf a consequence of the Lanthanoid contraction.
The typical oxidation state of Lanthanoid is +3. The oxidation states of +2 and +4 are exhibited by some of the elements to acquire a stable electronic configuration of f0, f7 or f14.
Q.1 Which of the following is the most common oxidation state among the lanthanoid?

(a) +3 (b) +4 (c) +2 (d) +5

Q.2 IUPAC name of product formed by reaction of methyl amine with two moles of ethyl chloride

(a) N,N-Dimethylethanamine (b) N,N-Diethylmethanamine

(c) N-Methyl ethanamine (d) N-Ethyl - N-methylethanamine

Q. 3 The formula of the coordination compound Tetraammineaquachloridocobalt(III) chloride is

(a) [Co(NH3)4(H2O)Cl]Cl2 (b) [Co(NH3)4(H2O)Cl]Cl3

(c) [Co(NH3)2(H2O)Cl]Cl2 (d) [Co(NH3)4(H2O)Cl]Cl

Q.4.Which set of ions exhibit specific colours? (Atomic number of Sc = 21, Ti = 22, V=23, Mn = 25, Fe = 26, Ni = 28 Cu = 29 and Zn =30)

(a) Sc3+, Ti4+, Mn3+ (b) Sc3+, Zn2+, Ni2+

(c) V3+, V2+, Fe3+ (d) Ti3+, Ti4+,

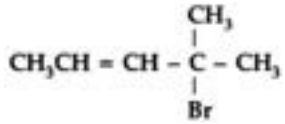
Q.19 Write the following reactions. (1+1)

(a) SN2 reaction (b) wurtz reaction

(c) swart reaction (d) finkelstein reaction

OR

Write the IUPAC name of



Q.20 Out of ethyl bromide and ethyl chloride which has higher B.P. and Why? 2 Marks

Q.21 Haloalkanes dissolve easily in organic solvents. Why? 2 Marks

Q.22 The rate constant for first order reaction is 60/s. How much time will it take to reduce the concentration of the reaction to 1/10 of its initial value. 3 Marks

Q.23 A first order reaction is found to have a rate constant k =5.5 x 10 -12 sec -1 . Find the half life of the reaction. 2 Marks

Q. 24 What is lanthanoid contraction?. Write two consequences of lanthanoid contraction. 3 Marks

Q. 25 Describe crystal field theory (CFT) 2 Marks

Q.26. Write mechanism of SN1 reaction. 2 Marks

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