

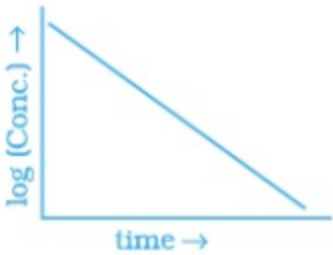
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MONTHLY TEST 2

CHEMISTRY

CLASS-12

1	In a first-order reaction, the time taken for the concentration to fall from 1.0 M to 0.5 M is 23.1 minutes. The rate constant (k) is: a) 0.01 min^{-1} b) 0.03 min^{-1} c) 0.693 min^{-1} d) 0.03 s^{-1}	1
2	Which one of the following complexes will show optical isomerism? a) $[\text{Co}(\text{NH}_3)_6]^{3+}$ b) $[\text{Co}(\text{en})_3]^{3+}$ c) $[\text{CoCl}_6]^{3-}$ d) $[\text{Ni}(\text{CN})_4]^{2-}$	1
3	Which of the following is a nucleophilic substitution reaction (SN1 mechanism)? a) $\text{CH}_3\text{CH}_2\text{Cl} + \text{OH}^- \rightarrow \text{CH}_3\text{CH}_2\text{OH}$ b) $(\text{CH}_3)_3\text{CCl} + \text{OH}^- \rightarrow (\text{CH}_3)_3\text{COH}$ c) $\text{C}_6\text{H}_5\text{Cl} + \text{NaOH} \rightarrow \text{C}_6\text{H}_5\text{OH}$ d) $\text{CH}_3\text{Cl} + \text{AgNO}_2 \rightarrow \text{CH}_3\text{NO}_2$	1
4	The coordination number of cobalt in $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ is: a) 3 b) 4 c) 5 d) 6	1
5	The rate constant of a zero-order reaction is $0.03 \text{ mol L}^{-1} \text{ s}^{-1}$. The time required for the concentration of reactant to drop from 0.9 M to 0.3 M is: a) 10 s b) 20 s c) 30 s d) 60 s	1
6	The IUPAC name of $\text{CH}_3\text{-O-C}_2\text{H}_5$ is a) Methoxy ethane b) Ethoxy ethane c) Methyl ethane d) Ethyl ethane	1
7	The geometry of $[\text{Ni}(\text{CO})_4]$ is: a) Square planar b) Tetrahedral c) Octahedral d) Trigonal planar	1
8	Which haloalkane undergoes hydrolysis fastest? a) CH_3Cl b) $\text{CH}_3\text{CH}_2\text{Cl}$ c) $(\text{CH}_3)_3\text{CCl}$ d) $\text{C}_6\text{H}_5\text{Cl}$	1
9	For each question, choose the correct option: (A) Both assertion and reason are true and reason is the correct explanation (B) Both assertion and reason are true but reason is not the correct explanation (C) Assertion is true but reason is false (D) Assertion is false but reason is true Assertion: SN1 reactions are favoured in polar protic solvents. Reason: Polar protic solvents stabilize carbocations formed during reaction.	1
10	Assertion: $[\text{Fe}(\text{CN})_6]^{4-}$ is diamagnetic. Reason: CN^- is a strong field ligand which causes pairing of electrons in Fe^{2+} .	1
11	For a general reaction $\text{A} \longrightarrow \text{B}$, the plot of concentration of A vs time is given in Fig. Answer the following question on the basis of graph.	2

	 (a) What is the order of the reaction ? (b) What is the slope of the curve? (c) What is the unit of the rate constant? (d) Write integrated rate law expression for reaction.	
12	Write differences between SN1 and SN2 reactions.	2
13	Write the IUPAC name, structure and oxidation state of metal in $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$.	2
14	Write the products of the following: (i) $\text{CH}_3\text{--CH}_2\text{--Cl} + \text{alcoholic KOH} \rightarrow ?$ (ii) $\text{CH}_3\text{--CH}_2\text{--CH}_2\text{--Cl} + \text{aq. KOH} \rightarrow ?$	2
15	A first-order reaction takes 40 minutes for 30% decomposition. Calculate the time taken for 90% decomposition.	2
16	A reaction is first order in A and second order in B. (i) Write the differential rate equation. (ii) How is the rate affected by increasing the concentration of B three times? (iii) How is the rate affected when the concentrations of both A and B are doubled?	3
17	Aryl halides are extremely less reactive towards nucleophilic substitution. Explain with suitable reasons.	3
18	Compound 'A' with the molecular formula $\text{C}_4\text{H}_9\text{Br}$ is treated with aq. KOH solution. The rate of this reaction depends upon the concentration of the compound 'A' only. When another optically active isomer 'B' of this compound was treated with aq.KOH solution, the rate of reaction was found to be dependent on concentration of compound and KOH both. Or 1)Finkelstein Reaction 2)Friedel craft's alkylation reaction 3)Wurtz-fitting reaction 4)Sandmeyer reaction	4