

Date Planned ://	Daily Tutorial Sheet-2	Expected Duration : 90 Min		
Actual Date of Attempt ://	Level-1	Exact Duration :		

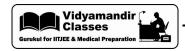
- 16. In the presence of a catalyst, the heat evolved or absorbed during reaction:
 - (A) decreases
 - **(B)** increases
 - (C) remains unaffected
 - **(D)** may increase or decrease
- 17. If k_1 = rate constant at temperature T_1 and k_2 = rate constant at temperature T_2 for a first order reaction, then which of the following relations is correct? (Ea: activation energy)
 - (A)
 - $\log \frac{k_1}{k_2} = \frac{2.303 \text{ E}_a}{R} \left(\frac{T_2 T_1}{T_1 T_2} \right)$ $\log \frac{k_2}{k_1} = \frac{E_a}{2.303 R} \left(\frac{T_2 T_1}{T_1 T_2} \right)$
 - $\log \frac{k_2}{k_1} = \frac{E_a}{2.303R} \left(\frac{T_1 T_2}{T_2 + T_1} \right)$ (C)
- (**D**) $\log \frac{k_1}{k_2} = \frac{E_a}{2.303R} \left(\frac{T_1 T_2}{T_2 T_1} \right)$

- 18. A catalyst:
 - (A) increases the average kinetic energy of the reacting molecules
 - decreases the value of enthalpy change in the reaction **(B)**
 - (C) reduces the time required for reaching the equilibrium state in the reaction
 - (D) decreases the rate of backward reaction
- 19. Diazonium salt decomposes as : $C_6H_5N_2^+Cl^-\longrightarrow C_6H_5Cl+N_2$. At 0°C, the evolution of N_2 becomes two times faster when the initial concentration of the salt is doubled. Therefore, the reaction is:
 - (A) first order
 - **(B)** second order
 - (C) independent of the initial concentration of the salt
 - (D) zero order
- 20. Which of the following statements is not correct for order of a reaction?



- (A) Order of a reaction can be determined experimentally
- **(B)** It is the sum of the powers of concentration terms in the rate law expression
- (C) It does not necessarily depend upon the stoichiometric coefficients
- Order of a reaction cannot be fractional (D)
- 21. For a given reaction of first order, it takes 20 minutes for the concentration to drop from 1.0M to 0.6M. The time required for the concentration to drop from 0.6M to 0.36M will be:
 - (A) more than 20 minutes
 - **(B)** less than 20 minutes
 - (C) equal to 20 minutes
 - (D) infinity
- $\frac{7}{8}$ th of the active nuclei present in a radioactive sample has decayed in 8s. The half-life of the sample is : 22.
 - (A) 2s
- **(B)**
- (C) 7s
- $\frac{8}{3}$ s





23.	When	ethyl acetate was hydrolysed in presence of 0.1 N HCl, the rate constant was found to be									
	5.40×1	$\times 10^{-3} \mathrm{s}^{-1}$. But when 0.1 N $ \mathrm{H_2SO_4} $ was used for the hydrolysis, the rate constant was found to be									
	$6.20 \times 10^{-3} \text{s}^{-1}$. From these values we can say that :								\odot		
	(A)	H ₂ SO ₄ is stron	nger acid	l than HCl	9						
	(B)	$ m H_2SO_4$ is weaker acid than HCl Both the acids have equal strength The data is insufficient to compare the strengths of HCl and $ m H_2SO_4$									
	(C)										
	(D)										
24.	The amount of radioactive $_{53}I^{128}$ ($t_{1/2}$ = 25 minutes) left after 50 minutes will be :										
	(A)	1/4	(B)	1/2	(C)	1/3	(D)	None of these			
25.			` ,		` ,	•	` ,		entration		
20.	The half life of a first order reaction is 10 minutes. If initial amount is 0.08 mole/litre and concentration at some instant 't' is 0.01 mol/litre, then the value of 't' is:										
	(A)	10 min.	(B)	30 min.	(C)	20 min.	(D)	40 min.			
26.	The rat	e of a gaseous r	eaction	is given by the o	expressio	on k [A][B]. If the	volume	e of the reaction	vessel is		
	suddenly reduced to $1/4^{th}$ of the initial volume, the reaction rate relative to original rate will be :										
	(A)	1/10	(B)	1/8	(C)	8	(D)	16			
27 .	For an	For an endothermic reaction, where ΔH represents the enthalpy of the reaction in kJ/mol, the value for									
	the energy of activation will be:										
	(A)	less than ΔH	(B)	zero	(C)	more than ΔH	(D)	equal to ΔH			
28 .	In the first order reaction, 75% of the reactant disappeared in 1.388 hr. Calculate the rate consta								ant of the		
	reaction:										
	(A)	$3.6\!\times\!10^{-3}s^{-1}$	(B)	$2.8\!\times\!10^{-4}\text{s}^{-1}$	(C)	$17.2\!\times\!10^{-3}s^{-1}$	(D)	$1.8 \times 10^{-3} s^{-1}$			
29.	In the r	in the reversible reaction : $2NO_2 \xrightarrow[k_2]{k_1} N_2O_4$; the rate of disappearance of NO_2 is equal to :									
	(A)	$\frac{2k_1}{k_2}\big[\operatorname{NO}_2\big]^2$			(B)	$2k_1[NO_2]^2 - 2k$	$_2[\mathrm{N}_2\mathrm{O}_4]$				
	(C)	$2k_1[NO_2]^2 - k_1$	$_{2}[N_{2}O_{4}]$		(D)	$(2k_1 - k_2)[NO_2$					

The rate constant, the activation energy and the Arrhenius parameter of a chemical reaction at 25° C are **30**. $3.0 \times 10^{-4} \, s^{-1}$, $104.4 \, \text{kJ mol}^{-1}$, and $6.0 \times 10^{14} \, s^{-1}$ respectively. The value of the rate constant as $T \to \infty$ is: