

5.



Question Papers

ExamCode: RPSC_CH_CHEM

1. The values of n and I quantum numbers for sub -Shell 3d are respectively :

Magnetia exhitel quantum number for as	rimuthal quantum 2 area
3) 3 and 3	4) 2 and 3
1) 2 and 2	2) 3 and 2

- 2. Magnetic orbital quantum number for azimuthal quantum 2 are:

 1) -2, -1, 0
 2) -2, 0, +1, +2

 3) -2, -1, 0, +1, +2
 4) +2, +1, -2, -1
- 3. According to Hund's rule the number of unpaired electrons in the atoms of nitrogen ,oxygen and fluorine are respectively:

1) 7, 8, 9	2) 5, 6, 7
3) 9, 8, 7	4) 3, 2, 1

4. The maximum possible similar quantum numbers of two electrons present in an orbital of an atom may be:

1) 4 3) 2	2) 3 4) 1
	e group having the same number of etrons is :
А.	Li^+, Na^+, K^+
В.	P,S^{2-},Cl^{-},Ar
C.	N ^{3–} ,O ^{2–} ,F [–] ,Ne
D.	$F^{-}, Cl^{-}, O_2^{2^{-}}, S$

6. Which of the following set of elements is not in the correct sequence according to long form of periodic table ?

1) B, C, N, O	2) Al, Si, P, S
3) Cr, Mn, Fe, Co	4) Cr, Ti, V, Mn

7. which of the following electronic configuration does not belong to a d-block element?

1) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^1 4s^2$	2) 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁵ 4s ²
3) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2$	4) 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ¹

8. The Values of atomic radii (in pm)of Na, Be, B and Mg lie in the range of 88 to 186, The value of atomic radii for B(in pm) is :

1) 186	2) 160
3) 111	4) 88

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9. Which of the following statement is not correct related to electronegativity of elements?

1) Pauling is used to measure electronegativity of elements	2) Fluorine is an element having maximum electronegativity
3) In general electronegativity of elements decreases from right to left in a period.	4) In the first group of elements electronegativity decreases from top to bottom

10. The correct order of first ionization enthalpy (ionization energy) among the following is .

	1) Na < Al < Mg < Si 3) Si < Al	2) Na < Mg4) None of these
11.	The molecule having ionic as well as covalent bond 1) KCN 3) CHCl ₃	between its atoms is : 2) H ₂ o 4) C ₂ H ₅ OH
12.	Which of the following molecule or ion has a coord 1) NH ₃ 3) OH ⁻	linate bond? 2) BF ₃ 4) [Fe(CN) ₆] ³⁻
13.	Which of the following shape is given to a molecule	e due to dsp ² hybridization ?
	 1) Tetrahedral 3) Octahedral 	2) Square planar4) Square Pyramidal
14.	The Correct order of increasing field strength of the	ne ligands is :
	1) $F \le Br \le I^- \le SCN^-$	2) $I^{-} SCN^{-} Br^{-} < F^{-}$
	3) $I^- < Br^- < SCN^- < CI^-$	4) $F^- < Br^- < SCN^- < Cl^-$
15.	The hybridization of chlorine atom in CIF ₃ molecu	le is:
	1) sp ² 3) sp ³ d	2) sp ³ 4) d ² sp ³
16.	The bond order of C ₂ is:	
	1) 1	2) 2
	3) 3	4) 4
17.	Which of the following element is not considered a 1) Cu	s a transition element? 2) Zn
	3) Sc	4) Ag
18.	The correct outermost electronic configuration of	palladium atom is:
	1) $5s^0 4d^{10}$	2) $5s^{1}_{2} 4d^{9}_{3}$
	3) $5s^1 4d^{10}$	4) $5s^2 4d^8$
19.	The set of elements belonging to first ,second and t following is	hird transition series respectively ,out of the
	1) Zr, Y, W	2) Fe Co, Cd
	3) Ag, Cu, Pd	4) Zn, Cd, Hg





20. Eu²⁺ is a:
1) Strong reducing agent
3) Weak reducing agent

2)	Strong oxidising agent	
4)	Weak oxidising agent	

- 21. Most Common oxidation state generally shown by actinoids is : 1) +2 2) +3
 - (1) + 23) +4

(2) + 3(4) + 5

- 22. Which of the Following pair of ions have same oxidation number of their central metal atoms?
 A. MnO₄⁻, MnO₄²⁻
 B. VO₂⁺, Cr₂O₇²⁻
 C. MnO₄⁻, CrO₄²⁻
 D. CrO₄²⁻, Cr₂O₇²⁻
- 23. The state of hybridization of C in carbocation is: 1) sp²

	1) sp ² 3) sp	2) sp ³ 4) sp ³ d	
24.		ich of the following is not an etrophile?	
	А.	BF ₃	-
	В.	⁺ NO ₂	
	С.	(CH ₃) ₃ N	
	D.	Cl^+	

25. The C - C bond lengths in benzene is :

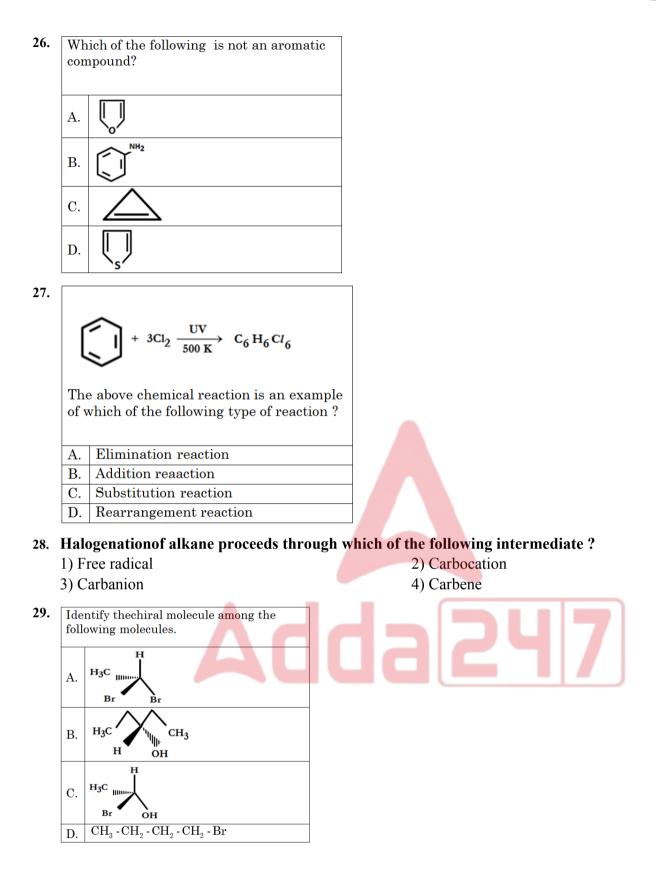
1) 154 pm

3) 3 bonds of 154 pm and 3 bonds of 134 pm

2) 134 pm 4) 139 pm

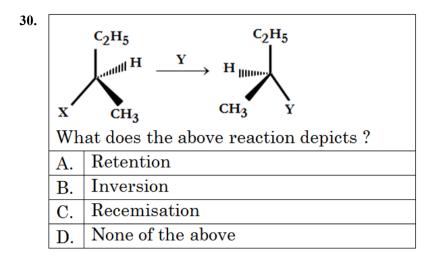












31. Which physical property is different in enantiomers ?

1) Direction of rotation of the plane of polarized light 2) Refractive index

3) Density

4) Melting point and boiling point

32. The most stable conformation of cyclohexane is :

1) Chair form	2) Boat form
3) Twist boat	4) Half chair

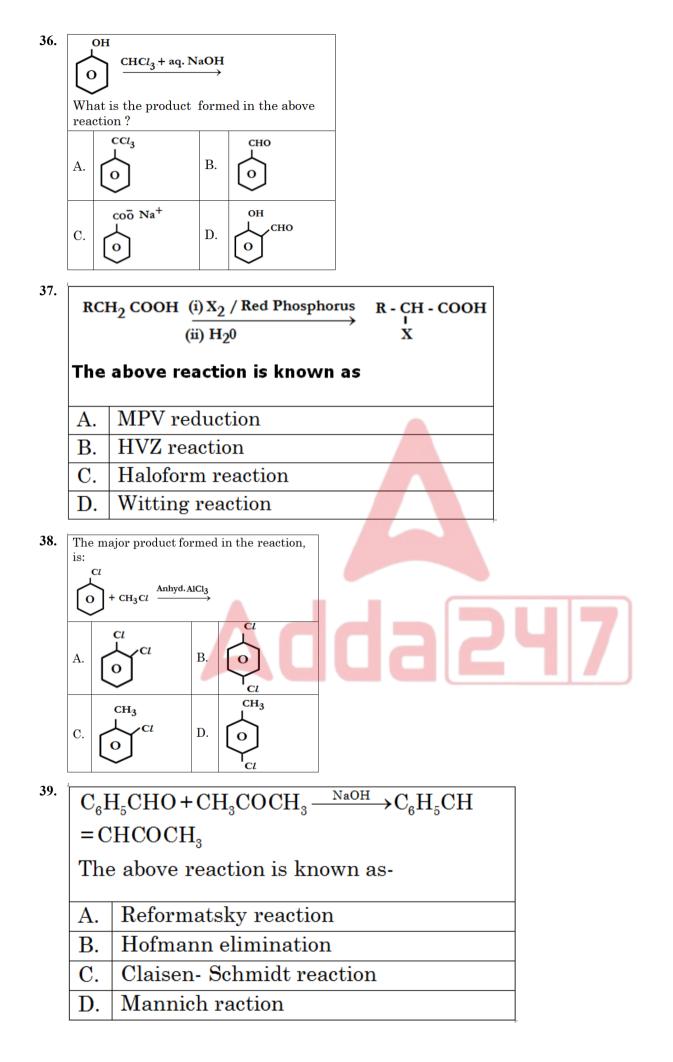
33. With which of the following compound the relative configuration D or L are related

- 2) Glycerol acid 1) Glycerol 3) Glyceraldehyde 4) Lactic acid **34.** Which of the following is Z - isomer ? н、 с ′ ^{СН}3 Α. ч∽ç CO₂H ∠ Ph Me В. \mathbf{Ph} Me CH₃ - H C. ∕Ĉ н **`**со₂н с ́ ́ ^н Cl ĩ D. _{H₂C}[∠]Ċ_{Br} 35. When CH₃CHO reacts with CH₃CH₂CHO
- in presence of dilute NaoOH then on heating which of the following product is not formed? $\Delta \quad CH_{\circ} - CH = CH - CHO$

л.	
В.	$CH_3 - CH = C_{CH_3} - CHO_{CH_3}$
C.	$CH_3 - CH_2 - CH = C - CHO$
D.	$CH_2 = CH - CH_2 - CH_2 - CHO$











	The oxidising agent used in Baeyer - Villiger (oxidation is :
	1) H ₂ O ₂	2) KM _n O ₄
	3) HNO ₃	4) CrO ₃
41. In presence of which catalyst high density polythene is formed when addition polymerisation takes place in a hydrocarbon solvent ?		
	1) Wilkinson catalyst 3) LiAlH ₄	 2) Ziegler Natta Catalyst 4) H₂/Ni
	As which of the following N-Bromosuccinimic	2
	1) Reducing agent	2) Oxidising and brominating agent
	3) dehydrating agent	4) dehydrohalogenating agent
43.	Ultra - violet spectroscopy is based on :	
	1) Hook's Law	2) Fieser's Law
	3) Beer-Lambert's Law	4) Wood- Word's Law
44.	If λ max shifts from 230 nm to 203 nm, the shi	ft is known as:
	1) Red Shift	2) Bathochromic shift
	3) Hypsochromic shift	4) Hyperchromic shift
	highest energy?	
	A. $\sigma \rightarrow \pi^*$	
	В. π→σ*	
	A. $\sigma \rightarrow \pi^*$ B. $\pi \rightarrow \sigma^*$ C. $\pi \rightarrow \pi^*$	
		5247
46.	$\begin{array}{ccc} C. & \Pi \rightarrow \Pi^* \\ D. & \sigma \rightarrow \sigma^* \end{array}$	
46.	С. п→п*	
46.	C. $\Pi \rightarrow \Pi^*$ D. $\sigma \rightarrow \sigma^*$ Which of the following value of I (nucle	
46.	C. $\Pi \rightarrow \Pi^*$ D. $\sigma \rightarrow \sigma^*$ Which of the following value of I (nucle spin) will give useful signal in NMR spectra ? A. 0	ear
46.	C. $\Pi \rightarrow \Pi^*$ D. $\sigma \rightarrow \sigma^*$ Which of the following value of I (nucle spin) will give useful signal in NMR spectra ?	ear The second s
46.	C. $\Pi \rightarrow \Pi^*$ D. $\sigma \rightarrow \sigma^*$ Which of the following value of I (nucle spin) will give useful signal in NMR spectra ? A. 0 B. $\frac{1}{4}$ 3	ear
46.	C. $\Pi \rightarrow \Pi^*$ D. $\sigma \rightarrow \sigma^*$ Which of the following value of I (nucle spin) will give useful signal in NMR spectra ? A. 0 B. $\frac{1}{4}$ 3	

- 47. Which of the following is not the use of chloroform ?
 - 1) Solvent for fats 3) Antiseptic

- 2) Production of freon refrigerant4) Solvent for i₂ and alkaloids





48. About how many times artificial sweetening agent saccharin is sweeter than cane sugar

1) 100	2) 550
3) 1000	4) 2000

49. In which of the following reagent sodium potassium tartrate is used?

49.	In whi	ch of the following reagent sodium pota	ssium tartrate is used?
	1) Toll 3) Feh	en's reagent ling A	 2) Bayer's reagent 4) Fehling B
50.		h of the following does not give orm reaction ?	
	A. ($CH_{3} = C = C + CH_{3}$	
	2.	ICHO	
	0.	$CH_3 - CH_3 - CH_3$	
	D.	$\operatorname{CH}_3 - \operatorname{C-}_{\underset{O}{\sqcup}} \operatorname{CH}_3$	
51.	C ₆ I	$H_{12}O_6 \xrightarrow{\text{Enzyme}} 2C_2H_5OI$	$H + 2 CO_2$
	The	e name of enzyme in the abo	ve reaction
	is:		
	А.	Invertase	
	В.	Zymase	3117
	C.	Diastase	
	D.	Maltase	
	L		

52. Which of the following is used as phase transfer catalyst?

	1) Urea 3) Menthol	2) Acetoacetic ester4) Crown ether		
53.	Which one of the following is a non -reducing sugar ?			
	1) Sucrose	2) Glucose		
	3) Maltose	4) Lactose		
54.	Glucose on reaction with bromine -water gives :			
	1) Pentabromo derivative	2) Saccharic acid		

3) Gluconic acid

- 2) Saccharic acid
- 4) n-hexane





55.	Deficiency of whic	h vitamin causes	s increased fragilit	tv of RBCs and	muscular v	veakness ?
55.	Denetency of white	II vituilli cuuse	, mer euseu ir ugin	ty of httpcs and	muscular	veaniess .

	1) Vitamin K 3) Vitamin B ₆	2) Vitamin E 4) Vitamin B ₁₂
56.	 The Sugar moiety present in DNA molecule is: 1) β -D -2-deoxyribose 3) β -D -Glucopyranose 	 2) β -D -ribose 4) β -D-fructofuranose
57.	An example of globular protein is 1) Insulin 3) Keratin	2) Myosin4) Protein present in hair, wool and silk
58.	Which one of the following is not an essential amin1) Valine3) Alanine	o acid? 2) Leucine 4) Lysine
59.	Which hormone suppresses ovulation ?1) Testro sterone3) Progesterone	2) estrogen4) thyroxine
60.	The weak antiseptic for eyes is : 1) tincture of Iodine 3) Iodoform	2) Boric acid4) chlorine
61.	Disinfectant among the following is 1) Soframicine 3) furacine	2) 1% solution of phenol4) 0.2% solution of phenol
62.	The antibiotic having bactericidal effect is:1) penicillin3) Erythromycin	2) Tetracycline4) chloramphenicol
63.	Which of the following is not a broad spectrum and1) Ampicillin3) Penicillin G	a (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
64.	Acetyl Salicylic acid is 1) Dettol 3) Aspirin	2) Chloroquine4) Ampicillin
65.	If the dispersed phase and dispersion medium are t	two liquids then the colloid formed is known as :
	1) Sol 3) Foam	2) Emulsion4) Gel
66.	Dispersion medium and dispersed phase in butter a 1) Solid ,Liquid 3) Solid ,Gas	are respectively : 2) Liquid, Solid 4) Solid ,Solid

67. Colloid formations not possible when dispersed phase and dispersion medium are respectively :

1) Solid ,Solid	2) Solid ,Liquid
3) Liquid, Liquid	4) Gas, Gas





- 68. Which of the following is not a method to purify colloid ?

 Electro dialysis
 Ocagulation

70. The study of rate and mechanism of chemical reaction is known as :

1) Thermodynamics2) Chemical Kinetics3) Chemical equilibrium4) Surface chemistry

71. The unit of rate Constant for zero order reaction is :

/1.	Inc	unit of rate Constant for zero order reactio		
	1) mo	$pl L^{-1} s^{-1}$		2) mol ⁻¹ L s ⁻¹ 4) mol L s ⁻¹
	3) s ⁻¹			4) mol L s ⁻¹
72.		Rate K[A] ^{3/2} [B] ⁻¹ , then the order of ction will be :	l	
	A.	$\frac{5}{2}$		
	В.			
	C.	$\frac{-5}{2}$	C	
	D.	$\frac{-1}{2}$		
		cularity of any reaction can not be :		
	1) 0			2) 1
	3) 2			4) 3

74. The order of artificial radioactive decay reaction is:

1) Zero	2) First
3) Second	4) Pseudo - First

- 75. According to collision Theory Z is known as :1) Probability factor
 - 3) Collision frequency

- 2) Steric factor
- 4) Orientation of molecule





76.	CH	$I_3COOC_2H_5 + H_2O \xrightarrow{H^+} CH_3COOH$	
		2H5OH	
		ler of reaction,	
	А.	2	
	В.	Zero	
	С.	1	
	D.	$\frac{1}{2}$	
77.	If the	re is exchange of energy and matter between	system and surroundings, then the system is called:
	· ·	lated system en system	2) closed system4) adiabatic system
78.		heat is transferred from system to the surro	
	1) Zer 3) Pos		2) Negative4) Unity
70	,	h of the following law is stated as $\Delta U = q + W$	
19.		and the following law is stated as $\Delta = \mathbf{q} + \mathbf{w}$ ind Law of thermodynamics	2) First Law of thermodynamics
	3) Sec	cond Law of thermodynamics	4) Zeroth Law of thermodynamics
80.		neasure of disorder is know as :	
	1) Ent 3) Ent		2) Gibb's energy4) Heat
81.	-		
01.	ner	ationship between C_p and C_v for an al gas is :	
	A.	$C_v - C_p = R$	
	В.	$C_p - C_v = R$	
	C.	$\frac{C_{p}}{C_{v}} = R$	
	D.	$\frac{C_v}{C_p} = R$	
82.	For E	xothermic reaction the value of ΔH is :	
	1) Neg	gative	2) Positive

3) Zero

2) Positive4) Unity

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83.	Oxidation reaction occuring in Daniell cell			
	is:			
	A. $Cu^{2+} + 2e^- \rightarrow Cu(s)$			
	B. $Zn(s) \rightarrow Zn^{2+} + 2e^{-}$			
	C. $\operatorname{Zn}^{2+} + 2e^{-} \to \operatorname{Zn}(s)$			
	D. $Cu(s) \rightarrow Cu^{2+} + 2e^{-}$			
84.	In the cell reaction ,			
	$\operatorname{Zn}(s) + \operatorname{Cu}^{2+}(aq) \to \operatorname{Zn}^{2+}(aq) + \operatorname{Cu}(s),$			
	if $E_{R}^{\circ} = 0.34 V \text{ and } E_{L}^{\circ} = -0.76 V$,			
	then E°_{cell} will be -			
	A0.42 V			
	B. 1.1 V			
	C. 0.42 V			
	D1.1 V			
85.	The Unit of specific conductance is :			
	1) ohm	2) ohm cm		
	3) $ohm^{-1} cm^{-1}$	4) ohm ⁻¹		
86.	Q = It, is related with :	2) Osturald's Law		
	1) Kohlrausch's Law 3) Faraday's Law	2) Ostwald's Law4) Daniel'SLaw		
87.	For a strong electrolyte, the conductivity of the se	olution on dilution:		
	1) Increases	2) Decreases		
00	3) Remains constantAmalgam of mercury with sodium is a solution o	4) Become infinite		
88.	1) Solid in solid	2) Liquid in solid		
	3) Solid in liquid	4) Liquid in liquid		
89.	A mass of the solute present in 100 ml of the solu			
	 Mass percentage Mass by volume percentage 	2) Volume percentage4) Parts per million		
90.	If 74.5 g of KCl is dissolved in 1Kg of water ,then			

1) 1 m	2) 10 m
3) 0.1 m	4) 0.01 m





91.	if $\Delta H > 0$,then the dissolution process is:	
	1) Exothermic	2) Endothermic
	3) Adiabatic	4) Isothermal
92.	Two solutions having same osmotic pressure at a given temperature ,are called :	
	1) Isobaric solutions	2) Isothermal solutions
	3) Isotonic solutions	4) Isotopic solutions
93.	"Partial vapour pressure of each volatile component in the solution is directly proportional to its mole fraction " This Law is known as:	
	1) Dalton's Law	2) Hess's Law
	3) Henry 's Law	4) Raoult's Law
94.	Ratio of carbon, oxygen and hydrogen atoms in a molecule of fructose is :	
	1) 1 : 1 : 2	2) 1 : 2 :1
	3) 2 : 1 :1	4) 2 : 3 : 2
95.	Errors that depend on constant reasons and recur in all observations are called :	
	1) Indeterminate errors	2) Determinate errors
	3) Random errors	4) Unsystematic errors
96.	Which of the following indicator is used in complex metric titrations?	
	1) Phenolphthalein	2) Methyl orange
	3) EDTA	4) Iodine
97.	A cation exchanger consists of :	
	1) Polymeric anion and active cation	2) Polymeric cation and active anion
	3) Active cation and active anion	4) Polymeric cation and inactive anion
98.	Which of the following is not a software ?	
	1) Microsoft word	2) Adobe reader
	3) Pendrive	4) Google Chrome
99.	The output device out of the following is :	
	1) Key board	2) Mouse
	3) Pendrive	4) Monitor
100. Device that is used in the bank to read the code number on check is :		
	1) OMR	2) OCR
	3) MICR	4) Scanner