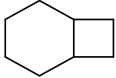
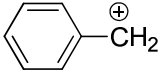
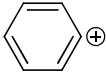
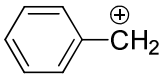
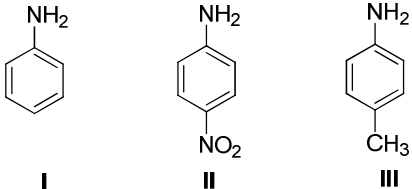


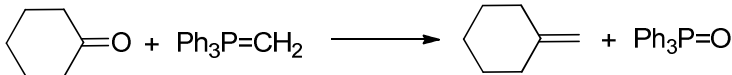
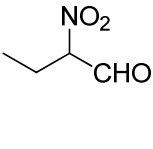
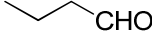
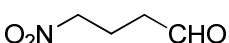
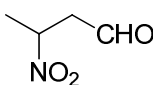
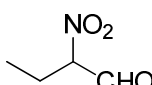




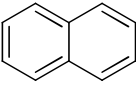
RGUCET 2022 MSc Chemistry

1	Which of the following word is plural?					
	a) examination	b) Index	c) criteria	d) emergency	c	criteria
2	Emma could save money if she buys _____ furniture.					
	a) economics	b) economical	c) economize	d) economic	b	economical
3	How many eggs have your hens _____ this month?					
	a) lead	b) laid	c) lay	d) led	b	laid
4	Different types of letters used for printing are called ____					
	a) punctuations	b) styles	c) fonts	d) layouts	c	fonts
5	Antonym of Imperil?					
	a) risk	b) endanger	c) jeopardize	d) safeguard	d	safeguard
6	The article 'the' is used _____.					
	a) to make things general.	b) has no use or meaning.	c) to make a thing real.	d) to make something specific.	d	to make something specific
7	Select the correct tense for the following sentence. She is singing now.					
	a) Present Perfect Tense	b) Present Perfect Continuous Tense	c) Simple Present Tense	d) Present Continuous Tense	d	Present Continuous Tense
8	Find the subject in the given sentence? Sony reads a book.					
	a) reads	b) book	c) Sony	d) a	c	Sony
9	Re-arrange the following words to form a meaningful question. waiting/What/are/you/for?					
	a) What for you waiting are?	b) What are you waiting for?	c) What you are waiting for?	d) What waiting for you are?	b	What are you waiting for?
10	The train _____ left before he reached the station.					
	a) was	b) has	c) have	d) had	d	had
11	In which city, a Digital Population Clock has been inaugurated?					
	a) Hyderabad	b) Delhi	c) Mumbai	d) Kolkata	b	Delhi
12	How many colour dots make up one colour pixel on a screen?					
	a) 3	b) 9	c) 16	d) 265	a	3
13	Biological name of state bird of Arunachal Pradesh Great Hornbill is					
	a) Oriza sativa	b) Asarcornis scutulata	c) Passer domesticus	d) Buceros bicornis	d	Buceros bicornis
14	The average gravitational force of the earth is					
	a) 9800 cm/s ²	b) 9.8 m/s ²	c) 980 m/s ²	b) 9.8 cm/s ²	b	9.8 m/s ²

15	Marsh gas is					
	a) CH ₄	b) C ₂ H ₂	c) CO ₂	d) CO	a	CH ₄
16	Who designed the National Flag of India?					
	a) Sunderlal Bahuguna	b) Panduranga Hegde	c) Pingali Venkayya	d) Rabindranath Tagore	c	Pingali Venkayya
17	The Thomas Cup represents which sport?					
	a) Cricket	b) Badminton	c) Boxing	d) Archery	b	Badminton
18	Where in India is the Kanha National Park located?					
	a) Arunachal Pradesh	b) Rajasthan	c) Andhra Pradesh	d) Madhya Pradesh	d	Madhya Pradesh
19	Which country won ICC Women's Cricket World Cup 2022?					
	a) England	b) Austria	c) Australia	d) India	c	Australia
20	India has agreed to establish an Indian Institute of Technology in which country?					
	a) UAE	b) Bhutan	c) Singapore	d) Bangladesh	a	UAE
21	The speed of a boat in still water is 10 km/hr. If the speed of the boat against the stream is 8 km/hr, what is the speed of the stream?					
	a) 2 km/hr	b) 1.5 km/hr	c) 2.5 km/hr	d) 1 km/hr	a	2 km/hr
22	The value of $5^{1/4} \times (125)^{0.25}$ is					
	a) 5	b) 25	c) 125	d) 175	a	5
23	What comes next in the sequence: 2, 4, 10, 28, 82, ___?					
	a) 242	b) 244	c) 142	d) 300	b	244
24	If PINK is coded as 1691411, then RED will be coded as					
	a) 1820	b) 1691422	c) 1854	d) 1920	c	1854
25	The day before yesterday was Saturday. What will be the day after tomorrow?					
	a) Monday	b) Tuesday	c) Wednesday	d) Friday	c	Wednesday
26	As per the VSEPR theory, the shape of the SF ₄ molecule is-					
	a) tetrahedral	b) square planner	c) see-saw	d) T-shaped	c	see-saw
27	Which of the noble gas/gases form most compounds with other elements?					
	a) Xe and Kr	b) Xe, Kr and Ar	c) Kr	d) Xe	d	Xe
28	What is the hapticity of the two cyclopentadienyl groups in ferrocene?					
	a) 3, 5	b) 5, 5	c) 1, 5	d) 3, 3	b	5, 5
29	The metal ions that have highest mobility in biological media are-					
	a) Zn ²⁺ and Fe ²⁺	b) Zn ²⁺ and Fe ³⁺	c) Mg ²⁺ and Ca ²⁺	d) Na ⁺ and K ⁺	d	Na ⁺ and K ⁺

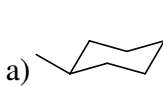
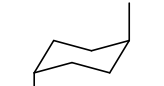
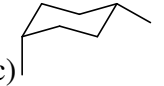
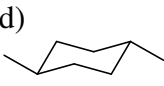
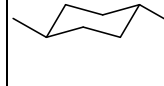
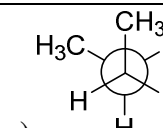
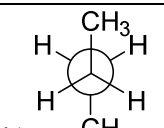
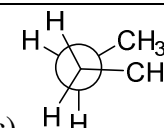
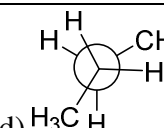
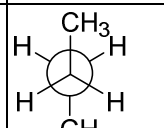
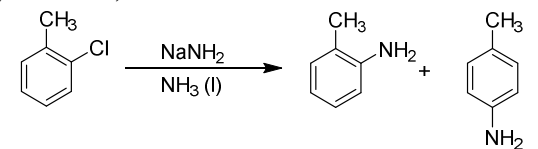
30	CH ₃ COOH behaves as a strong acid in					
	a) HF	b) H ₂ O	c) NH ₃	d) HNO ₃	c	NH ₃
31	The particle with smallest de Broglie wavelength (assume velocity is same for all)-					
	a) a neutron	b) a positron	c) an α -particle	d) all of these	c	an α -particle
32	Identify the paramagnetic ion-					
	a) He ₂ ⁺	b) O ₂ ²⁻	c) Ti ⁴⁺	d) Mg ²⁺	a	He ₂ ⁺
33	Surface tension does not vary with					
	a) temperature	b) concentration	c) vapour pressure	d) none of these	d	d) none of these
34	Which of the following metal ions can be detected and estimated by using dimethyl glyoxime?					
	a) Co ²⁺	b) Cd ²⁺	c) Ni ²⁺	d) Mg ²⁺	c	Ni ²⁺
35	During the formation of O ₂ ⁻ ion from O ₂ electrons are added to the					
	a) σ orbital	b) π orbital	c) σ^* orbital	d) π^* orbital	d	π^* orbital
36	Identify the isoelectronic pair-					
	a) O ²⁻ , Ar	b) Ca ²⁺ , F ⁻	c) Mg ²⁺ , K ⁺	d) N ³⁻ , Na ⁺	d	N ³⁻ , Na ⁺
37	As per the VSEPR theory, shape of PCl ₅ is					
	a) pentagonal	b) square pyramidal	c) trigonal bipyramidal	d) octahedral	c	trigonal bipyramidal
38	Which of the following is known as inorganic benzene?					
	a) B ₃ H ₃ N ₃	b) BH ₃ NH ₃	c) B ₃ H ₆ N ₃	d) H ₃ B ₃ N ₆	c	B ₃ H ₆ N ₃
39	Which of the following follow the 18-electron rule?					
	a) [Cr(CO) ₆] ⁺	b) [Cr(CO) ₆]	c) [Cr(CO) ₆] ⁻	d) (η^5 -C ₅ H ₅) ₂ Co	b	b) [Cr(CO) ₆]
40	Which of the following is/are generally used for the removal of coloured impurities from the solutions?					
	a) charcoal	b) silica gel	c) NaCl	d) anhydrous Na ₂ SO ₄	a	charcoal

41	Which of the following compounds is ionic?					
	a) BF_3	b) CCl_4	c) MgI_2	d) AlCl_3	c	MgI_2
42	Ethyl iodide in its reaction with moist silver oxide gives					
	a) Ethane	b) Propane	c) Ethanol	d) Methane	c	Ethanol
43	Which of the following is a polar protic solvent?					
	a) DMSO	b) DMF	c) CH_3OH	d) benzene	c	CH_3OH
44	Name of the following compound is-					
						
	a) bicyclo [4,0,2] octane	b) bicyclo [4,2,2] octane	c) bicyclo [4,2,0] octane	d) bicyclo [0,2,4] octane	c	bicyclo [4,2,0] octane
45	Which concept best explains that the 2-nitrophenol is more volatile than 4-nitrophenol?				c	H-bonding
	a) Steric hindrance	b) Hyperconjugation	c) H-bonding	d) Resonance		
46	Which is the most stable carbocation?				d	
	a) $(\text{CH}_3)_3\text{C}^+$	b) $(\text{CH}_3)_2\text{CH}^+$	c) 	d) 		
47	Which compound cannot be formed by Würtz reaction?				d	Methane
	a) Propane	b) Butane	c) Ethane	d) Methane		
48	The characteristic reactions shown by benzene is:				b	Electrophilic substitution reactions
	a) Electrophilic addition reactions	b) Electrophilic substitution reactions	c) Nucleophilic addition reactions	d) Nucleophilic substitution reactions		
49	2,4-Dinitrophenylhydrazine is used to detect the presence of:				b	Carbonyl compounds
	a) Aliphatic acids	b) Carbonyl compounds	c) Esters	d) Amines and amides		
50	The correct order of increasing basic strength for the following compounds is:				b)	II < I < III
						

	a) III < I < II	b) II < I < III	c) I < II < III	d) I < III < II		
51	Erythrose and threose are:				c	diastereomers
	a) homomers	b) cis-trans isomers	c) diastereomers	d) optimers		
52	A pair of enantiomers have:				c	different reactivity towards a chiral reagent
	a) different melting points	b) different refractive indices	c) different reactivity towards a chiral reagent	d) different chiral centres		
53	The number of unshared electrons present on the carbon atom of carbene is:				b	2
	a) 1	b) 2	c) 3	d) 4		
54	1. In S _N 2 reaction, the product is:				d	completely inverted
	a) partly racemised	b) completely racemised	c) partly inverted	d) completely inverted		
55	The following reaction is an example of: 				c	Wittig reaction
	a) Aldol condensation reaction	b) Reformatsky reaction	c) Wittig reaction	d) Robinson annulation reaction		
56	Which of the following reacts rapidly with base?				d	
	a) 	b) 	c) 	d) 		
57	Which of the following substances is not aromatic?				b	
	a) 	b) 	c) 	d) 		
58	The thermal ring opening reactions of cyclobutenes are:				a	conrotatory
	a) conrotatory	b) disrotatory	c) conrotatory or disrotatory depending on the temperature	d) cannot be predicted		
59	Which of the following heterocyclic compound is not aromatic:				d	Piperidine
	a) Pyridine	b) Pyrrole	c) Furan	d) Piperidine		
60	In sawhorse projection, a fully eclipsed form can be transformed to anti-staggered form by a rotation of:				c	180°
	a) 60°	b) 90°	c) 180°	d) 360°		
61	Which of the following has the smallest atomic radius?				a	F

	a) F	b) Cl	c) Mg	d) Cs		
62	Which of the quantum numbers determines orientation of the orbital?				c	m_l
	a) n	b) l	c) m_l	d) m_s		
63	Cyclophosphazene is:				b	$P_3N_3Cl_6$
	a) $P_3H_3N_3$	b) $P_3N_3Cl_6$	c) $B_3H_6P_3$	d) $P_3N_3Cl_3$		
64	What is the oxidation number of Mn in MnO_4^- ?				c	+7
	a) +3	b) +5	c) +7	d) +9		
65	Which of the following has a coordinate covalent bond?				d	$BF_3 \cdot Et_2O$
	a) H_3PO_4	b) P_2O_5	c) PCl_5	d) $BF_3 \cdot Et_2O$		
66	Which of the following is not a lanthanoid?				a	Cs
	a) Cs	b) Pm	c) Pr	d) Lu		
67	If the concentration of glucose ($C_6H_{12}O_6$) in blood is 0.9 g L^{-1} , what will be the molarity of glucose in blood?				c	0.005 M
	(a) 5.0 M	(b) 50.0 M	(c) 0.005 M	(d) 0.5 M		
68	What is the order of the reaction whose rate constant is $2.5 \times 10^{-2} \text{ min}^{-1}$?				b	one
	(a) zero	(b) one	(c) two	(d) three		
69	Average volume available to a molecule in a sample of a gas at STP is				b	$3.72 \times 10^{-20} \text{ cm}^3$
	(a) $1.66 \times 10^{-24} \text{ cm}^3$	(b) $3.72 \times 10^{-20} \text{ cm}^3$	(c) 22400 cm^3	(d) unpredictable		
70	A certain gas takes three times as long to effuse out as helium. Its molecular mass will be				d	36 u
	(a) 64 u	(b) 9 u	(c) 27 u	(d) 36 u		
71	The reciprocal of viscosity is called—				c	fluidity
	(a) surface tension	(b) frictional resistance	(c) fluidity	(d) pressure		
72	A catalyst will affect the rate of the forward reaction by changing the				a	activation energy
	(a) activation energy	(b) heat of reaction	(c) heat of formation	(d) potential energy of the products		
73	The molar conductance of a solution of an electrolyte				a	increases with dilution
	(a) increases with dilution	(b) decreases with dilution	(c) does not vary with	(d) unpredictable		

			dilution				
74	For the study of distribution law, the two solvents should be						
	(a) miscible	(b) non-miscible	(c) volatile	(d) reacting with each other	b	non-miscible	
75	Which of the following is not an intensive property?						
	(a) pressure	(b) concentration	(c) density	(d) volume	d	volume	
76	For exothermic reaction, ΔH is while for endothermic reaction it is						
	(a) positive; negative	(b) positive; positive	(c) negative; negative	(d) negative; positive	d	negative; positive	
77	A salt of weak acid and strong base on hydrolysis yields a solution which is						
	(a) slightly acidic	(b) slightly basic	(c) neutral	(d) highly acidic	b	slightly basic	
78	For a van der Waals gas, the inversion temperature is given by						
	(a) $T_i = \frac{Rb}{2a}$	(b) $T_i = \frac{2a}{Rb}$	(c) $T_i = \frac{Rb}{a}$	(d) $T_i = \frac{a}{Rb}$	b	$T_i = \frac{2a}{Rb}$	
79	Which of the following is the correct volume occupied by one molecule of water if the density of water is 1.0 g cm^{-3}						
	(a) 18.0 cm^3	(b) 22400 cm^3	(c) $6.02 \times 10^{23} \text{ cm}^3$	(d) $3.0 \times 10^{-23} \text{ cm}^3$	d	$3.0 \times 10^{-23} \text{ cm}^3$	
80	The stacking sequence in a hexagonal close packing (<i>hcp</i>) is						
	(a) ABCABC	(b) AABBA	(c) ABABAB	(d) AAAAAA	c	ABABAB	
81	The normality of 0.3 M sulphuric acid (H_2SO_4) is						
	(a) 0.9 N	(b) 0.6 N	(c) 0.3 N	(d) 0.1 N	b	0.6 N	
82	If a compound is formed in an <i>fcc</i> lattice with M atoms at the corners of the unit cell and N atoms at the face centers, the formula of the compound is						
	(a) MN	(b) MN_3	(c) M_3N	(d) M_2N_2	b	MN_3	
83	The osmotic pressure of equimolar solutions of CaCl_2 , NaCl and urea will be in the order						
	(a) $\text{CaCl}_2 > \text{NaCl} > \text{urea}$	(b) $\text{CaCl}_2 < \text{NaCl} < \text{urea}$	(c) $\text{urea} > \text{CaCl}_2 > \text{NaCl}$	(d) $\text{urea} < \text{CaCl}_2 < \text{NaCl}$	a	$\text{CaCl}_2 > \text{NaCl} > \text{urea}$	
84	The pH of a solution of a salt of weak base and strong acid is						

	(a) greater than 7	(b) less than 7	(c) equal to 7	(d) equal to zero	b	less than 7
85	The correct hybridization and bond angle of ammonia is					
	a) sp^3 and 120°	b) sp^3 and 107°	c) sp^2 and 120°	d) sp^2 and 107°	b	sp^3 and 107°
86	Which among the following represents the most stable conformation for 1,4-dimethylcyclohexane.					
	 a)	 b)	 c)	 d)	d	
87	1°, 2° and 3° alcohol can be distinguished by					
	a) Tollens test	b) Lucas Test	c) Hinsberg test	d) Brady's test	b	Lucas Test
88	The most stable conformer of butane is					
	 a)	 b)	 c)	 d)	b	
89	In the following reaction, the reactive intermediate involved is 					
	a) Carbocation	b) Carboanion	c) Free radical	d) Benzyne	d	Benzyne
90	A positive Tollens test gives a silver mirror. The silver mirror is due to					
	a) Ag^+	b) Ag^0	c) Cu^+	d) Cu^0	b	Ag^0
91	Among the following which represents the slowest process in the Jablonski diagram					
	a) Fluorescence	b) Phosphorescence	c) Intersystem crossing	d) Internal conversion	b	Phosphorescence
92	Which of the following undergoes Cannizzaro reaction					
	a) CH_3CHO	b) $HCHO$	c) CH_3CH_2CHO	d) $PhCH_2CHO$	b	$HCHO$
93	Carbonyl compounds can be converted to alkenes by					
	a) Cannizzaro reaction	b) Wittig reaction	c) Reformatsky reaction	d) Claisen condensation	b	Wittig reaction

94	The hybridization and structure of carbocation CH_3^+ is					
	a) sp and bent	b) sp^2 and linear	c) sp^2 and planar	d) sp^2 and pyramidal	c	sp^2 and planar
95	The hybridization of SF_4 is					
	a) sp^3	b) sp^3d	c) sp^3d	d) sp^3d^2	c	sp^3d
96	Two electrons present in the same orbital can be distinguished by which of the following quantum number					
	a) n	b) l	c) m_s	d) m_l	c	m_s
97	The unique property of carbon to form bonds with other carbon atoms is called.					
	a) Calcination	b) Carbonization	c) Carburizing	d) Catenation	c	Catenation
98	Which of the following is not an allotrope of carbon					
	a) graphite	b) Diamond	c) C_{60}	d) CH_4	d	CH_4
99	The complex which shows a spin only magnetic moment of 2.82 BM is					
	a) $[\text{Ni}(\text{CN})_4]^{2-}$	b) $[\text{NiBr}_4]^{2-}$	c) $\text{Ni}(\text{CO})_4$	d) $\text{Ni}(\text{PPh}_3)_4$	b	$[\text{NiBr}_4]^{2-}$
100	Which among the following complexes have a square planar geometry					
	a) $[\text{BeF}_4]^{2-}$	b) $[\text{ZnCl}_4]^{2-}$	c) $[\text{Cd}(\text{CN})_4]^{2-}$	d) $[\text{Pt}(\text{CN})_4]^{2-}$	d	$[\text{Pt}(\text{CN})_4]^{2-}$