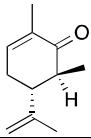


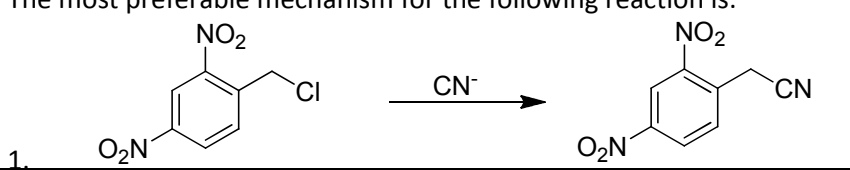
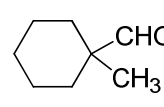
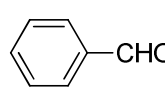
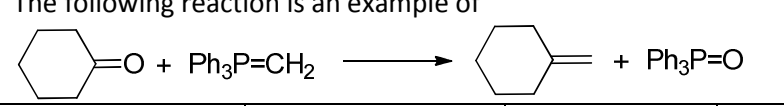
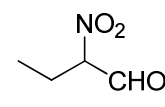
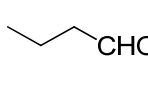
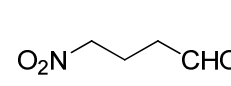
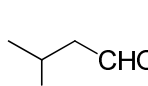
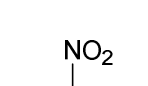
1	The data of research is _____.					
	a) Quantitative only	b) Qualitative only	c) Neither (a) nor (b)	d) Both (a) and (b)	d	Both (a) and (b)
2	An experiment is reliable if					
	a) the same/similar results are obtained from 3 or more trials	b) the experiment is done 3 times with big differences in results	c) there is mistake in one trial but no change in the next	d) it takes the same amount of time to complete each trial	a	the same/similar results are obtained from 3 or more trials
3	An example of scientific knowledge is					
	a) social traditions and customs	b) authority of the Prophet or great men	c) laboratory and field experiments	d) religious scriptures	c	laboratory and field experiments
4	The parameter to judge the depth of any research is					
	a) research title	b) research duration	c) research objectives	d) total expenditure on research	c	research objectives
5	Which of the following is not a research funding agency?					
	a) DST	b) DBT	c) CSIR	d) NAAC	d	NAAC
6	A researcher is generally expected to					
	a) study the ideas given by others	b) evaluate the findings of a study	c) generate new principles and theories	d) study the existing literature in a field	c	Generate new principles and theories
7	The statement – “Honesty is the best policy” is					
	a) an opinion	b) a value judgement	c) a value	d) a fact	b	a value judgement
8	Errors in computer programme are called					
	a) spam	b) mistakes	c) virus	d) bugs	d	bugs
9	A browser is					
	a) a server	b) an HTML system	c) an application software for accessing and viewing webpage	d) a hardware	c	An application software for accessing and viewing webpage
10	A small text file that a web server stores on a user hard drive when the user visits certain web sites are called					
	a) Cookie	b) Logjam	c) History	d) None	a	Cookie
11	In India, networking of libraries through electronic media is done by					
	a) Infflibnet	b) Libinfnet	c) Internet	d) HTML	a	Infflibnet
12	The first step of research is					
	a) Data analysis	b) sample collection	c) Identifying a	d) setting objectives	c	Identifying a problem

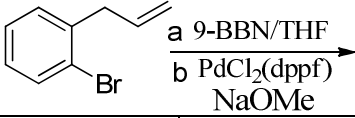
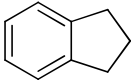
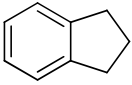
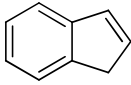
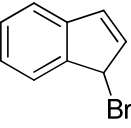
			problem			
13	In research, something that does not 'vary' is called a					
	a) Variable	b) Constant	c) Method	d) None	b	Constant
14	Which of these is not a method of data collection?					
	a) Interviews	b) Questionnaires	c) Tabulation	d) Observations	c	Tabulation
15	A researcher conducted three experiments with 100 subjects each following uniform design instead of one experiment with 300 subjects. This is known as					
	a) Validation	b) Manipulation	c) Replication	d) Observation	a	Validation
16	Concepts are of Research					
	a) tools	b) guide	c) methods	d) variables	a	tools
17	The conceptual framework in which a research is conducted is called a					
	a) Synopsis of research	b) Research hypothesis	c) Research paradigm	d) Research design	d	Research design
18	Plagiarism is					
	a) using previous data	b) working on previous experiments	c) copying somebody else work without giving credit	D) citing somebody else work	c	copying somebody else work without giving credit
19	One of the following search engines is not exclusively meant for scientific information					
	a) Google scholar	b) Scifinder	c) Reaxys	d) Bing	d	Bing
20	UGC Stands for					
	a) University Governance Council	b) Union government Council	c) Union Government Commission	d) University Grants Commission	d	University Grants Commission
21	The most frequently occurring number in a set of values is called					
	a) mean	b) range	c) mode	d) median	c	Mode
22	In scientific research					
	a) there are assumptions which can easily verified experimentally	b) experiments can only refute assumptions	c) there are assumptions, but experiments cannot verify them	d) there are no assumptions at all	b	experiments can only refute assumptions
23	PhD stands for					
	a) Degree in Philosophy	b) Doctor of Philosophy	c) Doctor of Psychology	d) Doctor in Philosophy	b	Doctor of Philosophy
24	The essential quality of good researcher is					
	a) Scientific Temper	b) Being Casual	c) No punctuality	d) Ignorance	a	Scientific Temper

25	Computer operations are through					
	a) Remainder	b) Fractions	c) Decimal	d) Binary digits	d	Binary digits
26	The basic structural unit of silicates is					
	a) SiO^-	b) SiO_2^{2-}	c) SiO_3^-	d) SiO_4^{4-}	d	SiO_4^{4-}
27	The most probable electronic configuration of an octahedral Co(II) complex with a spin only magnetic moment of $4.0 \mu_B$ is					
	a) $t_{2g}^6 e_g^1$	b) $t_{2g}^5 e_g^2$	c) $t_{2g}^6 e_g^2$	d) $t_{2g}^3 e_g^2$	d	$t_{2g}^5 e_g^2$
28	With increasing temperature, magnetic susceptibility (χ), of a paramagnetic substance					
	a) decreases	b) increases	c) remains unchanged	d) slightly increases	a	decreases
29	The complex with inverse spinel structure is					
	a) Co_3O_4	b) Fe_3O_4	c) MgAlO_4	d) Mn_3O_4	b	Fe_3O_4
30	The point group of the molecule ClF_3 is					
	a) C_{2v}	b) C_{2h}	c) C_{3v}	d) D_{3h}	a	C_{2v}
31	An example of a hypervalent species is					
	a) $[\text{PF}_6]^-$	b) SF_4	c) $\text{BF}_3 \cdot \text{OEt}_2$	d) Cl^-	a	$[\text{PF}_6]^-$
32	The number of lone pairs present in SF_4 and XeF_4 on the central atom according to VSEPR theory is					
	a) 1, 2	b) 2, 2	c) 2, 1	d) 1, 3	a	1, 2
33	In the acid base reaction $\text{BrF}_3 + \text{F}^- \rightarrow \text{BrF}_4^-$, BrF_3 is a					
	a) Brønsted acid	b) Lewis acid	c) Brønsted base	d) Lewis base	b	Lewis acid
34	The radiation that has the greatest penetrating power is					
	a) α	b) β	c) γ	d) visible light	c	γ
35	The quantum number not obtained from the Schrodinger wave equation is					

	a) n	b) l	c) m_l	d) m_s	d	m_s	
36	The point group symmetry of ethane in the staggered form is						
	a) D_{3h}	b) D_{3d}	c) C_{3v}	d) C_{3h}	b	D_{3d}	
37	Identify the molecule with zero dipole moment						
	a) H_2O	b) BCl_3	c) SO_2	d) $CHCl_3$	b	BCl_3	
38	Number of nodes in a $3s$ orbital is						
	a) zero	b) one	c) two	d) three	c	two	
39	Dry ice is						
	a) solid SO_2	b) solid NO_2	c) water below $0^\circ C$	d) solid CO_2	d	solid CO_2	
40	Which of the following metal is protected by a layer of its own oxide?						
	a) Fe	b) Au	c) Ag	d) Al	d	Al	
41	Splitting pattern for $>CH_2$ protons in CH_3CH_2Br is :						
	a) singlet	b) doublet	c) triplet	d) quartet	d	quartet	
43	Which of the following is a ketohexose?						
	a) xylose	b) galactose	c) fructose	d) mannose	c	fructose	
43	The mechanistic pathway of the Reformatsky reaction involves the formation of a						
	a) carbene	b) nitrene	c) radical	d) zinc-enolate	d	zinc enolate	

44	The absolute configuration for the two chiral centres in the following molecule is?				b	5R,6S
						
	a) 5R,6R	b) 5R,6S	c) 5S,6R	d) 5S,6S		
45	One of the coupling partners for Negishi cross coupling reaction is				b)	Organozinc

	a) Organoboron	b) Organozinc	c) Organotin	d) Organosilicon		
46	A suitable solvent for Grignard reaction is				c)	Diethyl ether
	a) Water	b) Methanol	c) Diethyl ether	d) Ethyl acetate		
47	The most preferable mechanism for the following reaction is: 				a)	S _N 2
	a) S _N 2	b) S _N 1	c) S _N i	d) Elimination		
48	Cannizzaro reaction is not given by				d)	CH ₃ CHO
	a) 	b) 	c) HCHO	d) CH ₃ CHO		
49	Pick out the correct match between the reduction and the reducing agent				d)	MPV reduction - Al[OCH(CH ₃) ₂]
	a) Birch reduction -H ₂ /Ni	b) Wolf Kishner reduction -Zn/HCl	c) Clemensen reduction - Anh. AlCl ₃	d) MPV reduction - Al[OCH(CH ₃) ₂]		
50	The following reaction is an example of 				c)	Wittig reaction
	a) Aldol condensation reaction	b) Reformatsky reaction	c) Wittig reaction	d) Robinson annulation reaction		
51	Which of the following react rapidly with base?				d)	
	a) 	b) 	c) 	d) 		
52	An enolate ion is a reactive intermediate in				c)	aldol reaction
	a) Reimer-Tiemann reaction	b) Grignard reaction	c) aldol reaction	d) Fries rearrangement		
53	Odd number donor synthon are of				b)	Not natural polarity
	a) Natural polarity	b) Not natural polarity	c) Neutral	d) None of the above		
54	The N-atom in pyridine is				a)	sp ² hybridized
	a) sp ² hybridized	b) sp ³ hybridized	c) sp hybridized	d) can't be predicted		
55	Which one of the following is not an active methylene compounds?				a)	Nitromethane

	a) Nitromethane	b) Ethylacetoacetate	c) Diethylmalonate	d) Cyanoacetic acid		
56	The major product of the following reaction is 					
			c) 	d) An intramolecular Ullmann coupling product	a)	
57	Which of the following pair of orbitals have electron density along the axis?				b)	$d_{x^2-y^2}, d_{z^2}$
	a) d_{xz}, d_{yz}	b) $d_{x^2-y^2}, d_{z^2}$	c) d_{xy}, d_{yz}	d) d_{xy}, d_{z^2}		
58	Which of the following has maximum bond energy?					
	a) O_2^-	b) O_2^+	c) O_2	d) O_2^{2-}	b)	O_2^+
59	As a ligand CO is					
	a) only as σ -donor	b) only as π -donor	c) both as σ -donor and π -donor	d) a σ -donor and π -acceptor	d)	a σ -donor and π -acceptor
61	Identify the correct order of solubility in water					
	a) $BeSO_4 > CaSO_4 > MgSO_4 > SrSO_4 > BaSO_4$	b) $BeSO_4 > MgSO_4 > CaSO_4 > SrSO_4 > BaSO_4$	c) $BeSO_4 < CaSO_4 < MgSO_4 < SrSO_4 < BaSO_4$	d) $BeSO_4 < MgSO_4 < CaSO_4 < SrSO_4 < BaSO_4$	b)	$BeSO_4 > MgSO_4 > CaSO_4 > SrSO_4 > BaSO_4$
62	Inorganic benzene is					
	a) $B_3H_3N_3$	b) BH_3NH_3	c) $B_3H_6N_3$	d) $H_3B_3N_6$	c)	$B_3H_6N_3$

63	The molecule, BF_3 belongs to the point group					
	(a) D_{3h}	(b) D_{3k}	(c) C_{2v}	(d) C_{3v}	(a)	D_{3h}
64	The quantum mechanical operator for the momentum of a particle moving in one dimension is given by					
	(a) $i \frac{\hbar}{2\pi} \frac{d}{dx}$	(b) $\frac{\hbar}{2\pi} \frac{d}{dx}$	(c) $i \frac{\hbar}{2\pi} \frac{d}{dt}$	(d) $-\frac{\hbar^2}{2m} \frac{d^2}{dx^2}$	(b)	$\frac{\hbar}{2\pi} \frac{d}{dx}$
65	The Stirling formula for a large number of molecules, N is					
	(a) $\ln N! = N \ln N + N$	(b) $\ln N! = N \ln N - N$	(c) $\ln N! = \frac{N \ln N}{N}$	(d) $\ln N! = N \ln N \times N$	(b)	$\ln N! = N \ln N - N$
66	The formula used for the determination of surface tension by capillary rise method is					
	(a) $2\gamma = hrdg$	(b) $2\gamma = hr^2dg$	(c) $2\gamma = \pi r \cos \theta$	(d) $2\gamma = \pi hr^2dg$	(a)	$2\gamma = hrdg$
67	The weight average molecular mass of macromolecules is the					

	number average molecular mass.					
	(a) greater than	(b) lesser than	(c) equal to	(d) cannot say	(a)	greater than
68	The vibrational degree of freedom of a non-linear polyatomic molecule containing n atoms is					
	(a) $3n-5$	(b) $3n-6$	(c) $3n-4$	(d) $3n$	(b)	$3n-6$
69	In the standardization of $\text{Na}_2\text{S}_2\text{O}_3$ using $\text{K}_2\text{Cr}_2\text{O}_7$ by iodometry, the equivalent weight of $\text{K}_2\text{Cr}_2\text{O}_7$ is-					
	(a) MW/2	(b) MW/6	(c) MW/3	(d) Same as molecular weight	(b)	MW/6
70	The normality of 0.3 M phosphorous/ phosphonic acid (H_3PO_3) is					
	(a) 0.9	(b) 0.6	(c) 0.3	(d) 0.1	(b)	0.6
71	The region of electromagnetic spectrum employed in ESR spectroscopy is					
	(a) radio wave	(b) microwave	(c) infrared	(d) visible	(b)	microwave
72	A solution of sulfuric acid contains 88 g of H_2SO_4 per liter of the solution. The normality of the solution is-					
	(a) ~ 1.8 N	(b) ~ 0.9 N	(c) ~ 2.0 N	(d) ~ 1.0 N	(a)	~ 1.8 N
73	Which of the following function is an eigenfunction with respect to the linear operator, d/dx					
	(a) $\cos(ax)$	(b) $\sin(ax)$	(c) x^2	(d) e^{2x}	(d)	e^{2x}
74	The ionic strength of a solution which is 0.1 m in KCl and 0.2 m in K_2SO_4 is-					
	(a) 0.96 m	(b) 0.70 m	(c) 0.011 m	(d) 1.12 m	(b)	0.70 m
75	A plot of $\log x/m$ versus $\log p$ for the adsorption of a gas on a solid gives a straight line with slope equal to					
	(a) $n ; (n>1)$	(b) $1/n ; (n>1)$	(c) $\log k$	(d) $-\log k$	(b)	$1/n ; (n>1)$
76	If 7.0 g of NaOH is dissolved in 350 mL water, the molarity of resultant solution will be-					
	(a) 0.5 M	(b) 2.5 M	(c) 25 M	(d) 50 M	(a)	(a) 0.5 M
77	The aggregation of surfactant molecules is known as					
	(a) micelles	(b) clusters	(c) gels	(d) colloid	(a)	micelles
78	In van der Waals equation of state for a non-ideal gas, the net force of attraction among the molecules is given by					
	(a) $\frac{an^2}{v^2}$	(b) $P + \frac{an^2}{v^2}$	(c) $P - \frac{an^2}{v^2}$	(d) $-\frac{an^2}{v^2}$	(a)	$\frac{an^2}{v^2}$
79	Which of the following is microwave inactive?					
	(a) HCl	(b) Cl_2	(c) NO	(d) CO	(b)	Cl_2
80	When a strong acid is titrated against a strong base, the end point is the point					

	of					
	(a) zero conductance	(b) maximum conductance	(c) minimum conductance	(d) cannot be predicted	(c)	minimum conductance
81	The radial wave function, $R(r)$ of hydrogen atom depends on the following quantum numbers					
	(a) n and l	(b) m and l	(c) l and s	(d) n only	(a)	n and l

82	The central metal ion present in carbonic anhydrase is					
	a) Mg^{2+}	b) Co^+	c) Zn^{2+}	d) Ca^{2+}	c	Zn^{2+}
83	Which among the following biological dioxygen carriers do not contain iron in its active site					
	a) Myoglobin	b) Hemoglobin	c) Hemerythrin	d) Hemocyanin	d	Hemocyanin
84	In the following reaction, $CH_3C(O)Mn(CO)_5$ is formed through $CH_3Mn(CO)_5 + CO \longrightarrow CH_3C(O)Mn(CO)_5$					
	a) Reductive elimination	b) Migration of CO	c) Oxidative addition	d) Substitution	b	Migration of CO
85	Among the following, the complex which shows a spin only magnetic moment of 1.73 B. M. is					
	a) $[Ni(Br)_4]^{2-}$	b) $[Co(NH_3)_6]^{3+}$	c) $[CoF_6]^{3-}$	d) $[Fe(CN)_6]^{3-}$	d	$[Fe(CN)_6]^{3-}$
86	In the Wacker process, the catalytic addition of molecular oxygen to ethylene to form acetaldehyde happens at					
	a) Ir	b) Rh	c) Pd	d) Fe	c	Pd
87	The number of microstates arising out of a 3F term is					
	a) 5	b) 9	c) 21	d) 45	c	21
88	The following reaction is an example of $trans-IrCl(CO)(PPh_3)_2 + HCl \longrightarrow IrHCl_2(CO)(PPh_3)_2$					
	a) Reductive elimination reaction	b) Oxidative addition reaction	c) Substitution reaction	d) Insertion reaction	b	Oxidative addition reaction
89	The ground state term for metal with $3d^4$ configuration is					
	a) 4F	b) 3F	c) 5D	d) 2D	c	5D
90	Lanthanide contraction is due to increase in					
	a) effective nuclear charge	b) Shielding by 4f electrons	c) atomic radius	d) size of 4f orbital	a	effective nuclear charge
91	In the synthesis of cyclic phosphazene, $N_4P_4Cl_8$, the correct reagents required are					

	a) POCl_3 and NH_4Cl	b) POCl_3 and NH_3	c) PCl_5 and NH_4Cl	d) PCl_5 and NH_3	c	PCl_5 and NH_4Cl	
92	In the IR spectrum, two peaks were observed at 3314 and 2126 cm^{-1} . The compound is						
	a) $\text{CH}_3(\text{CH}_2)_3\text{CH}_2\text{C}\equiv\text{C}-\text{CH}_3$	b) $\text{CH}_3(\text{CH}_2)_4\text{CH}_2\text{C}\equiv\text{C}-\text{H}$	c) $\text{CH}_3(\text{CH}_2)_4\text{CH}_2\text{C}\equiv\text{N}$	d) $\text{CH}_3(\text{CH}_2)_3\text{CH}_2\text{C}\equiv\text{C}-\text{CHO}$	b	$\text{CH}_3(\text{CH}_2)_4\text{CH}_2\text{C}\equiv\text{C}-\text{H}$	
93	The correct statement about the following compound is						
	a) Compound is chiral due axial chirality	b) Compound is chiral due to helical chirality	c) Compound is chiral due to atropisomerism	d) Compound is achiral as it possess C-2 axis	c	Compound is chiral due to atropisomerism	
94	An organic compound ($\text{C}_9\text{H}_{10}\text{O}_2$) exhibited the following spectral data. The correct structure of the compound is: IR: 1694 cm^{-1} $^1\text{H NMR}$: δ 7.90 (d, $J = 8\text{ Hz}$, 2H), 7.08 (d, $J = 8\text{ Hz}$, 2H), 3.81 (s, 3H), 2.50 (s, 3H)						
	a)	b)	c)	d)	c		
95	In the following photochemical reaction, the product is						
	a)	b)	c)	d)	c		
96	In the reaction given below, the product and reaction intermediate involved is						
	a) free radical	b) nitrene	c) free radical	d) nitrene	b	nitrene	
97	The major product in the following reaction is						

	a)	b)	c)	d)	d		
98	The correct reagents combination to effect the following reaction is						
	a) (i) K, NH ₃ , tBuOH (ii) EtI	b) NaBH ₄ , CeCl ₃ •7H ₂ O EtOH, -15 °C	c) i) LiAlH(OEt) ₃ ii) H ₃ O ⁺	d) N ₂ H ₄ , KOH Δ	d	N ₂ H ₄ , KOH Δ	
99	Among the following which represents the most stable conformation of <i>trans</i> -1,2-dimethylcyclohexane						
	a)	b)	c)	d)	b		
100	In the positive test for nitrogen, the Prussian blue colour observed is due to						
	a) Na ₄ [Fe(CN) ₆]	b) Fe ₄ [Fe(CN) ₆]	c) Na ₄ [Fe(CN) ₅ (NO)]	d) Na ₄ [Fe(CN) ₄ (NO) ₂]	b	Fe ₄ [Fe(CN) ₆]	