	DEPARTM	ENT OF C	HEMISTRY	
Course Code: 07ATB	Programme:	B.Sc.,		CIA: I Test
Date: 27.07.2019	Maior:	BOTANY		Semester: I
Time: 2Hrs	Year:		I	Maximum: 50 Marks
Course Title:		CHEMIS'	TRY FOR BIO	LOGIST- I
	<u> </u> CI			
Answor AII questions	51	ECTION - A		$(10 \times 1 - 10)$
1 The unequal distribution of	Carbon atoms on e	ither side of t	he functional grou	$(10 \times 1 - 10)$
(a) Functional isomeri	sm (b) Tautomeric	(c) Pos	itional isomerism	(d) Metamerism
2 Plane-polarized light is affe	sin (b) radiomens	siii (c) 10s		(d) Metamensin
(a) Identical molecule	(b) all polymers	(c) chiral r	nolecules (d) al	l biomolecules
3 The name catalyst was give	s (0) an porymers	(c) chirar i	nonceutes (u) ai	CO4
(a) Chadwick (b) I I	Thomson (c)	Borzolius	(d) Rutherfo	ard
4 The enzyme which can cat	luse the conversion	n of glucose t	(u) Rument	CO4
4. The enzyme when can can	aryse the conversion	in or grucose i	(d) zymaca	04
(a) manage (b) dias	in the contest proc		(u) Zymase	CO4
5. Alsolic Oxide (As $_2O_3$) acts	(b) poison (c)	css	(d) catalyst	04
6 Which of the following is s	(b) poison (c) a	an enzyme	(u) catalyst	CO^{2}
(a) A1C1.	(b) $\mathbf{H}_{\mathbf{O}}^{+}$ (c)]	DE.	$(d) \mathbf{C} \mathbf{N}^{-}$	02
(a) AIC13 7 Which of the following is a	(0) $\Pi_3 O$ (C)	D 1'3	$(\mathbf{u}) \subset \mathbf{N}$	CO^{2}
7. Which of the following is e	$(b) CN^{-} (c) (c)$	<u>∩</u> 1-	(d) \mathbf{Pr}^+	02
(a) INII3 8 The arrow is used to repres	(0) CN (C)	CI	(u) DI	CO2
8. The allow is used to repres	(b) \rightarrow (c)		$(d) \rightarrow$	02
$(a) \rightarrow$	$(0) \leftarrow (0)$	\leftrightarrow	(u) —>	CO2
9. Which one of the following	(h) recent	ion reaction?	a) addition	(d) nolumerization
(a) emination	(b) rearrang	gement ((d) porymerization
(a) alactron deficient	(b) alastron	rich (o	both (a) and (b)	(d) none of these
(a) electron dencient		i iicii (c		(d) none of these
	S	ECTION – B	8	
Answer any FIVE questions				$(5 \ge 2 = 10)$
11. Define structural isomeris	m.			CO1
12. Define molecular formula.				
13. State the necessary condit	ions for a compoun	d to show Ge	eometric isomerisi	n. CO1
14. What is the difference bet	ween catalyst and e	enzvme?		CO4
15. Write the differences betw	veen addition and e	limination rea	action	CO2
16. What is polymerization re	action?			CO2
17. Write a note on rearrange	ment reaction.			CO2
6				
SECTION – C				
Answer any THREE question	ons			$(3 \times 6 = 18)$
18. State the necessary condit	ions for optical acti	ivity and inter	rpret the optical is	omerism of lactic acid. CO1
19. What are catalytic poisoning and promoters? Give examples. CO4				
20. Discuss nucleophiles and its types. CO2				
21. Explain electrophiles and its types with example. CO2			CO2	
22. Write the differences between resonance and tautomerism CO2				
SECTION D				
$\Delta nswer any ONE question $ (1 v 12 – 12)				
23. A compound has the follo	wing percentage of	mposition C	alculate its empir	ical formula
Mg= 9.76%; S=13.019	%; O=26.01% and	$H_2O=51.22\%$		CO1

Mg= 9.76%; S=13.01%; O=26.01% and H₂O=51.22%. CC 24. Write short notes on

i) substitution ii) addition and iii) elimination reactions. CO2

DEPARTMENT OF CHEMISTRY			
Course Code: 07ATP1	Programme:	B.Sc.,	CIA: I Test
Date: 27.07.2019	Maior:	PHYSICS	Semester: I
Time: 2Hrs	Year:	Ι	Maximum: 50 Marks
Course Title:		CHEMISTRY FOR	PHYSICIST - I
	<u>.</u>		
Answer AII questions	<u>D</u> .	<u>ECHON – A</u>	$(10 \times 1 - 10)$
1 Atomic number of an elem	ent is equal to the r	number ofi	n the nucleus of the atom $(CO1)$
(a) Neutrons (b) Pro	tons (c) Be	oth a & b (d) Ele	ectrons
2. The idea of stationary orbit	s was first given by	v	(<i>CO1</i>)
(a) Rutherford (b) J.J.	Thomson (c)	Niels Bohr (d) Ma	ax Planck
3. The energy of an electron i	n Bohr's atom	as we move away	from the nucleus (CO1)
(a) remains the same (b) dec	reases (c) increase	es (d) sometimes increase	s, sometimes decrease
4. "No two electrons in an ator	n can have same set	four set of identical quant	um numbers".it is the statement of (Co
(a) Aufbau principle (b) Hu	nd's rule (c) Paul	ie's exclusion principle	(d) none
5. According to valence bond	theory, a bond bet	ween two atoms is formed	d when (CO2)
(a) Half-filled atomic	orbitals overlap	(b) Fully filled atomic	orbitals overlap
(c) Non-bonding atom	ic orbitals overlap	(d) Electrons of the two	atoms overlap
6. The free rotation is not pos	sible in		(<i>CO2</i>)
(a) Delta bond b) Coo	rdinate bond c)	Pi bond d) Sigma bond	1
7. sp ³ hybridization leads to			(<i>CO2</i>)
(a) Trigonal geometry with bo	and angles 120° eac	ch (b) Tetrahedral ge	ometry with bond angles 109.5° each
(c) Tetrahedral geometry with	bond angles 90° e	ach (d) Square plana	r geometry with bond angles 90° eac
8. Which of the following is a	in example for sp ²	hybridisation?	(CO2)
(a) PCl ₅ (b) CH	4 (C	c) $BeCl_2$ (d) Ethylene	
9. The electronic configuration (a) $1s^22s^22n^{-2}2n^{-2}2n^{-1}$	(b) $1s^2 2s^2 2n^2 2n^2$	$2n^2$ (a) $1s^2 2s^2 2n^2 2n^{1/2}$	(CO2)
(a) 18 28 $2p_x 2p_y 2p_z$ 10 When one s and two p orb	(0) 18 28 $2p_x 2p_y 2$	$2p_z$ (c) 18 28 $2p_x 2p_y 2$	(CO2)
(a) Three new orbitals at 90°	to each other (b)	Two new orbitals at 90°.	to each other
(c) Two new orbitals at 180°	to each other (d)	Three new orbitals at 120)° to each other
	S	ECTION – B	
Answer any FIVE questions			$(5 \ge 2 = 10)$
11. Write the difference between	een orbit and orbita	ıl	(<i>CO1</i>)
12. How fast must a 54g tennis ball travel in order to have a de Broglie wavelength that is equal to that of a			
photon of green light 5400A°	?		(<i>CO1</i>)
13. Write the Differentiate be	tween bonding and	anti-bonding molecular	orbital (CO2)
14. Differentiate between sign	na and pi bond		(<i>CO2</i>)
15. Calculate the bond order of	of H_2 and He_2		(CO2)
16. What do you mean by hyt	oridization?	C 1 1	(<i>CO2</i>)
17. Give the graphical represe	entation of formation	on of oxygen molecule	(CO2)
A new on any THDEE quastic	<u>D.</u>	<u>ECTION – C</u>	(3 - 18)
18 Derive de-Broglie equation			$(5 \times 0 = 18)$
19 Explain the following terr	ns		
(i) Heisenberg uncerta	inty principle (ii) A	Aufbau principle (iii) Hu	nd's rule (CO1)
20. Write the postulates and d	rawbacks for VB t	heory	(CO2)
21. Draw the molecular orbital diagram and magnetic properties of oxygen molecule (CO2)			
22. Account on the formation of (i) s-s overlapping (ii) s-p overlapping (iii) p-p overlapping (CO2)			
$\frac{\text{SECTION} - D}{\text{SECTION} - D}$			
Answer any ONE question (1 x 12 = 12)			
23. (a) Derive an express ion	for Bohr's energy o	of electron in hydrogen at	om (6) (<i>CO1</i>)
(b) Discuss in detail about the Bohr's of hydrogen spectrum series. (6) (CO1)			
24. Write notes on: (i) sp hybr	ridization (ii)	sp ² hybridization (iii) sp ******	b' hybridization (CO2)

DEPARTMENT OF CHEMISTRY				
Course Code: 07ATZ1	Programme:	B.Sc.,	CIA: I Test	
Date: 27.07.2019	Major:	ZOOLOGY	Semester: I	
Time: 2Hrs	Year:	Ι	Maximum: 5	0 Marks
Course Title:		CHEMISTRY FOR B	IOLOGIST – I	
	SI	ECTION – A		
Answer ALL questions1. The simplest formula of a spresent in it is called	ubstance capable of (b) Structural f eutral electrophile? (l ₃ (c) H ⁺ (d) (ning C=C generally (b) addition e migration the fun (b) addition e from ethylene is a (b) addition (c) r	f expressing percentage co ormula (c) Empirical for Cl ⁻ v under goes	(10 x omposition of different rmula (d) Isomers type of reaction. (d) rearrangement sition to another position (d) rearrangement e of reaction. (d) rearrangement	1 = 10) nt elements (CO1) (CO2) (CO2) tion is called (CO2) (CO2)
6. Which of the following arrow is used to indicate the resonance structures of molecule? (CO2)				
7. In singlet ground state of the molecule, the spin multiplicity is (CO4) (a) 4 (b) 3 (c) 2 (d) 1 (CO4)				
8. Photochemical activation is	highly selective. T	his statement is		(CO4)
 (a) true (b) fals 9. The glow of fireflies is an e (a) sensitizer (b) cher 10. When excited singlet mode 	e (c) sometime example for miluminescence (c)	bioluminescence (d) lumi	nescence 10^{-8}	(CO4)
absorption process, is called (a) fluorescence (b) p	10. When excited singlet molecule (S_1) return to ground state (S_0) with the emission within 10^{-8} second after absorption process, is called (CO4) (a) fluorescence (b) phosphorescence (c) quantum yield (d) chemiluminescence			

<u>SECTION – B</u>

Answer any FIVE questions	(5 x 2 = 10)
11) Define molecular formula.	(CO1)
12) Define resonance.	(CO2)
13) Write the differences between addition and elimination reaction.	(CO2)
14) What is polymerization reaction?	(CO2)
15) What do you mean by photochemical reaction?	(CO4)
16) Write any two differences between fluorescence and phosphorescence.	(CO4)
17) What is bioluminescence?	(CO4)

SECTION – C

Answer any THREE questions	$(3 \times 6 = 18)$
18) Discuss Electrophiles and its types with examples.	(CO2)
19) Discuss Nucleophiles and its types with examples.	(CO2)
20) Write the differences between resonance and tautomerism.	(CO2)
21) Discuss chemiluminescence with examples.	(CO4)
22) Write the differences between thermal and photochemical reactions	(CO4)

<u>SECTION – D</u>

<u>SECTION - D</u>	
Answer any ONE question	$(1 \times 12 = 12)$
23) Write short notes on i) Substitution ii) Addition and iii) Elimination reactions.	(CO2)
24) Discuss in detail about Jablonski diagram	(CO4)

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234				
DEPARTMENT OF CHEMISTRY				
Course Code: 07CTTT	Programme:	B.SC.,	CIA: I Test	
Time: 24172	Major: Voor		Semester: 1	50 Mortza
Course Title	I Car.		MISTRY _ I	SU Marks
			2MIGINI - I	
Answer ALL questions	<u>51</u>	<u>ECTION – A</u>	(10 x	(1 - 10)
1 The IUPAC name of isopro	onane is			$(\mathbf{CO3})$
(a) 1-Methylpropane	(b) 2-Methylpropa	ne (c) 2-Ethylpropane	e (d) 3-Methylpropa	(005) 1e
2. The formula of a chem	ical compound is a	graphical representation	of the molecular stru	cture ($\mathbf{CO3}$)
(a) Molecular	(b) Structural	(c) Empirical	(d) Isomeric	
3. Which of the following cor	npounds is NOT an	aromatic compound?	(u) 1501110110	(CO3)
	CH ₂	aronnano compound.		(000)
	, ľ	~		
a)	b) [] c)	(b ()		
		N	Ň,	
			Н	
4. The correct structure of ber	izene was proposed	by		(CO3)
(a) Dewar (b) Lai	ndenberg (c) h	Kekule (d) S	Suzuki	
5. Aromatic character of benzene is proved by (CO3)				
(a) resonance theory	(b) aromatic	c sextet theory (c) Orb	oital theory (d) All o	if these
6. Adsorption is an	_ process:			(CO5)
(a) endothermic	1 1/1 .	(b) exotherm	1C	
(c) both exothermic and endothermic (d) none of the above				
(COS)				
(a) decreases with first	rease in pressure	(b) increases	with increase in press	ure
(c) is independent of p	oressure	(d) none of u	tion isothorm hoose	the former is
8. Langmuir adsorption isothe	rin is advantageous	s over Freundlich adsorp	biton isotherm because	(CO5)
(a) tomporature	(b) progenro	(a) concentration	(d) surface area	(\mathbf{COS})
Adsorption is a	(b) pressure		(u) surface area	$(\mathbf{CO5})$
9. Ausorption is a	phenomenon.	(a) lavor	(d) all the above	(\mathbf{COS})
10 Eriendlich adsorption isot	(D) surface	by the equation:	(u) all the above	$(\mathbf{CO5})$
(a) $\text{xm}-\text{K}\text{p}^{1/n}$	(b) $v/m-Kn^{1/n}$	(c) $\mathbf{x}\mathbf{m} - \mathbf{K}/\mathbf{n}^{1/n}$	(d) $\mathbf{x}/\mathbf{m} - \mathbf{K}/\mathbf{n}^{1/n}$	(\mathbf{COS})
(a) xiii–Kp	(b) x/m= K p	(c) XIII – \mathbf{R} /p	$(\mathbf{u}) \times \mathbf{m} - \mathbf{K} p$	
	SI	CTION - B		
Answer any FIVE questions	<u>51</u>		(5 x	2 = 10)
11. What are isomers?				(CO3)
12. What is functional isomer	ism? Give an exam	ple.		(CO3)
13. Define metamerim.		L		(CO3)
14. What is adsorption? Give an example. (CO5)				(CO5)
15. Define Adsorption Isotherm. (CO5)				
16. Draw adsorption isobars f	or physical adsorpti	on and chemical adsorp	otion.	(CO5)
17. Define sorption.		Ĩ		(CO5)

SECTION – C

Answer any THREE questions		$(3 \times 6 = 18)$	5)
18. Draw the structure of the following	ng compounds.	(CC)
A) 4-Isopropyl-5-methyloctane	B) 3-Chloro-1-propene	C) 2-Methyl-2-cyclohexen-1-ol	
19. An organic substance contains the	e following percentage comp	position of elements. (CC)
C= 18.6%; H=1.55%; Cl=55.0	04% and O=24.81%. Calculation	ate its empirical formula.	
20. What do you mean by Huckel rule	e? Explain with examples.	(Co	03)
21. Distinguish between physical ads	orption and chemical adsorp	tion. (CC)
22. Discuss any five applications of a	dsorption.	(Cu	05)

<u>SECTION – D</u>

(CO3)

Answer any ONE question (1 x 12 = 12)

23. i) Give the IUPAC names of the following compounds. (8)





ii) Classify the following compounds as aromatic or anti-aromatic or non-aromatic. (4)



24. Derive Langmuir adsorption isotherm equation. Show under what condition it becomes identical with Freundlich adsorption isotherm equation. (CO5)

	DEPARTM	ENT OF CHEMISTR	Y	
Course Code: 07CT12	Programme:	B.Sc.,	CIA: I Test	
Date: 26.07.2019	Major:	CHEMISTRY	Semester:	[
Time: 2Hrs	Year:	Ι	Maximum:	50 Marks
Course Title:		GENERAL CHEN	MISTRY – II	
	St		-	
Answer ALL questions	51	LCTION – A		$(10 \times 1 - 10)$
1 Which of the following is a	n intensivo proport			$(10 \times 1 = 10)$
a) Tomporature	h) surface tension	a) viscosity	d) all of these	(CO4)
2 Thermodynamics is applied	bla to	c) viscosity	u) all of these	$(\mathbf{CO4})$
2. Thermodynamics is applied		(b) ma	arocania systems o	(CO4)
(a) Homogonoous system	ame only	(0) IIIa (d) hat	croscopic systems of	only
3 A thermos flask is an ayam	ellis olliy	(u) net	erogeneous systems	(CO4)
5. A merinos nask is an exam	(b) aloged system	(a) on an avatam	(d) hatara ganagua a	(CO4)
(a) Isolated system	(b) closed system	(c) open system	(d) neterogeneous s	(CO4)
4. A gas contained in a cylind	(h) a hatara aanaana	on constitutes	vatare (d) an isolat	(CO4)
(a) an open system	(b) a neterogeneous	s system (c) a closed sy	/stem (d) an isolat	ed system
5. An isobaric process takes p	(h) measure		(d) an an tration	(CO4)
(a) temperature	(b) pressure	(c) volume	(d) concentration	(CO1)
6. According to Arrhenius, ac	ids are			(COI)
a) Proton donor	b) Proton acceptor	c) Electron donor	d) Electron accepto	r
/. Which one of the following	is Lewis acid?			(COI)
a) HNO_3	b) CH ₃ COOH	c) S_1O_2	d) BF_3	(201)
8. CaO is an example of				(COI)
a) Lux-Flood acid	b) Usanovich base	c) Lux-Flood base	d) Usanovich acid	
9. Wurtz reaction involves the	interaction of alky	I halides in dry ether with	h to give alkane.	(CO3)
a) Sodium	b) Zinc	c) Copper	d) Platinum	
10. Amongst the following hy	drocarbons, the one	e having lowest boiling p	oint is	(CO3)
a) n-Hexane	b) n-Pentane	c) Isopentane	d) Neopentane	
	SE	ECTION – B		
Answer any FIVE questions				$(5 \times 2 = 10)$
11. What do you understand b	y the terms: Extens	ive properties and Intens	ive properties? Give	two examples
of each category.				(CO4)
12. What are state functions?	How do these differ	from path functions?		(CO4)
13. Define the term thermody	namics			(CO4)
14. What is meant by Lewis a	cid and lewis base?			(CO1)
15. Compare the boiling point	s of n-butane, n-per	ntane and n-hexane		(CO3)
16. Write the general formula	of alkanes.			(CO3)
17. Predict the product in the	following reaction.			(CO3)
CH_3 - $CH=CH_2$ H_2	→ ?			
Pt/573 F	ζ			
	SE	ECTION – C		
Answer any THREE question	ons			$(3 \times 6 = 18)$
18. Distinguish between rever	sible and irreversib	le process.		(CO4)
19. State and explain First law	of Thermodynami	cs		(CO4)
20. Write a note on i) Corey-H	House synthesis ii) H	Kolbe's synthesis		(CO3)
21. Comment on the mechanis	sm of free radical su	ubstitution.		(CO3)
22. Write short notes on the fo	ollowing acid-base of	concept: i) Lux flood ii) I	Bronsted-Lowry	(CO1)
	SE	ECTION – D		
Answer any ONE question				$(1 \times 12 = 12)$
22. a) Describe different type	s of thermodynamic	c processes. (9)		(CO4)
b) Explain the following to	erms open, closed a	nd isolated systems. (3)		(CO4)
24. a) Discuss any four chemical properties of alkanes. (8) (CO3)			(CO3)	
b) Write a note on Sab	atier-Senderson rea	ction (4)		(CO3)

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234				
	DEPARTM.	ENT OF CHEMISTRY		
Course Code: 070131	Programme:	B.SC.,	CIA: 1 Test	
Date: 23.07.2019	Major:		Semester: III	
Time: 2Hrs	Year:		Maximum: 50 Marks	
Course little:		ORGANIC CHEM	ISTRY - I	
	SI	ECTION –A		
Answer ALL questions	C 1 1 1		$(10 \times 1 = 10)$	
1. Aniline when oxidized with	1 Caro's acid gives	anzona a) Nitrahanzan	$(\mathbf{U}\mathbf{U}2)$	
2 Nitrobanzana when reduced	D) Murosod with Zn + NaOH	gives	$(\mathbf{CO2})$	
a) Aniline	b) Hydrazobenzene	c) Azoxybenzer	d) Nitrosobenzene	
3. Which one of the following	is a reagent in the	Gabriel amine synthesis?	(CO3)	
a) an acyl or aryl chlor	ride b) hvdroxvl	amine c) phthalimide	d) sodium azide	
4. What is the product of the r	reaction of an acid c	chloride and a primary amin	ne? (CO3)	
a) an amine	b) an ester	c) an amide c	l) a secondary amine	
5. Carbylamine test is a diagn	ostic test for		(CO3)	
a) primary amine	b) secondary amine	e c) tert-amine c	l) quaternary ammonium salts	
6. The reactivity order of alky	'l halides in S _N 2 is		(CO1)	
a) $CH_3 X > 1^\circ > 2^\circ > 3$	0	b) CH ₃ X > $2^{\circ} > 1^{\circ} > 3$	0	
c) CH ₃ X > $3^{\circ} > 1^{\circ} > 2$	2°	d) CH ₃ X > $3^{\circ} > 2^{\circ} > 1$	0	
7. Which step in S_N reaction	is a slow rate deter	mining step?	(CO1)	
a) Attack of nucleophi	le	b) Formation of a racer	nic mixture	
c) Formation of a trans	sition state	d) All of the mentioned	vide to form (CO1)	
a) polyethylene	b) polyviny	l chloride () teflor	d) acetylene	
9 The nucleophilic substitutions do not occur in baloarenes because (COI)				
a) The carbon-balogen bond is much shorter				
b) The carbon-haloger	bond is stronger co	ompared to that in haloalka	nnes	
c) The lone pair of elect	rons on the halogen p	participates in delocalization v	with the π -electrons of benzene ring	
d) All of the mentione	d		-	
10. Benzene is treated with ch	lorine in the presen	ce of anhydrous FeCl ₃ give	es (CO1)	
(a) chlorobenzene (b) benzyl chloride (c) acetophenone (d) benzoyl chloride				
	SI	ECTION $-B$		
Answer any FIVE questions	, •, 1	1 '1' 0	$(5 \times 2 = 10)$	
11. How will you distinguish	between nitrobenze	ne and aniline?	(CO4)	
12. What happen when ethyla	mine undergoes cai	is then electrols	(CO3)	
15. Account for the fact that a	chloride is inert?	ac man aconois.	(CO3) (CO1)	
15 Give any one method of n	reparation of ethyl	chloride	(COI) (COI)	
16 Give the preparation of all	vl iodide	emonue.	(CO1)	
17. What are amines? Why et	hylamine is a strong	ger base than ammonia	(CO3)	
	SI	ECTION – C		
Answer any THREE question	ons		$(3 \times 6 = 18)$	
18. Explain the reduction of nitr	obenzene under diffe	rent conditions and indicate t	he products formed in each.(CO3)	
19. Give the mechanism of Gabriel-phthalimide reaction for synthesis of amines. (CO2)				
20. Interpret the mechanism E2 and E1 reactions with suitable examples. (CO1)				
21. Discuss the chemical properties of allyl iodide. (CO1)				
22. Discuss the nucleophilic and electrophilic aromatic substitution reactions of chlorobenzene. (CO1)				
SECTION – D				
Answer any ONE question $(1 \times 12 = 12)$				
25. Discuss the electrophilic a	und nucleophilic sub	visulution reaction of nitrob	to alkyl halida Differentiata S 2	
and S _v 1 reactions	S_{N^2} and S_{N^1} reaction	ons in uctail with reference	to any manue. Differentiate $S_N 2$	
and DN1 reactions.				

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234 DEPARTMENT OF CHEMISTRY Course Code: 07CT32 **Programme:** B.Sc., CIA: I Test Date: 26.07.2019 **CHEMISTRY** Semester: III Major: Time: 2Hrs Year: Π Maximum: 50 Marks **Course Title:** PHYSICAL CHEMISTRY -I SECTION – A **Answer ALL questions** $(10 \times 1 = 10)$ 1. The molecular mass of the compound is an example of (CO 4)(a) additive property (b) constitutive property (c) additive as well as constitutive property (d) chemical property 2. The net dipole moment of the molecule is (CO 4)(a) sum of all individual bond moments (b) product of all individual bond moments (c) vector resultant of all individual bond moments (d) all of these 3. A chiral molecule has (CO 4)(a) no plane of symmetry (b) one plane of symmetry (c) infinite plane of symmetry (d) centre of symmetry 4. A racemic mixture has (CO 4)(a) zero optical rotation (b) positive optical rotation (c) negative optical rotation (d) infinite optical rotation 5. The paramagnetism is due to the presence of (CO 4)(a) diamagnetic substance (b) paramagnetic substance (c) ferromagnetic substance (d) none of these 6. The molar volume of a liquid at temperature where its surface tension is unity is called (CO 4)(a) molar volume (b) molar surface tension (c) molar viscosity (d) parachor 7. A spontaneous change is accompanied by of internal energy or enthalpy. (CO1)(c) neither increase nor decrease (a) increase (b) decrease (d) none of these 8. The entropy is measured in (CO1)(b) $JK^{-1} mol^{-1}$ (c) entropy unit (a) cal K^{-1} mol⁻¹ (d) all of these ____ of the molecules of the system. 9. Entropy is a measure of _____ (CO1)(b) velocity (a) concentration (c) zig-zag motion (d) randomness or disorder 10. The efficiency of a heat operating between 400 K and 300 K is (CO 1)(a) 1.0 (b) 0.75 (c) 0.50(d) 0.25<u>SECTION</u> – B **Answer any FIVE questions** $(5 \times 2 = 10)$ 11. How will you calculate the percentage of ionic character of HBr? (CO 4)12. Define the term additive property and constitutive property (CO 4)13. Derive the mathematical expression for parachor (CO 4)14. Account on the magnetic properties Vs. oxygen molecule (CO 4)15. How will you measure magnetic properties? (CO 4)16. What is the need of Second law of thermodynamics? (CO1)17. Justify the Second law of thermodynamics, which states that "the net entropy of the universe tends to increase" (CO 1) **SECTION - C Answer any THREE questions** $(3 \times 6 = 18)$ 18. Write a note on optical activity and chemical constitution (CO 4)19. Discuss the following (a) Dunstan rule (b) Rheochor (c) molar viscosity (CO 4)20. Explain the term entropy and show that it is state function with the units of entropy. (CO 4)21. Derive an expression for the entropy of a mixture of ideal gas. (CO1)22. Explain that the entropy of the system and the surroundings increase in an irreversible process but remains constant in a reversible process. (CO1)**SECTION – D** Answer any ONE question $(1 \times 12 = 12)$

23. Illustrate the ability of dipole moment in determining the molecular structure (CO 4)

24. What is a cyclic process? Describe in detail the Carnot reversible cycle for establishing the maximum convertibility of heat in to work. (CO 1)

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234				
DEPARTMENT OF CHEMISTRY				
Course Code: 07CT51	Programme:	B.Sc.,	CIA: I Test	
Date: 23.07.2019	Major:	CHEMISTRY	Semester: V	
Time: 2Hrs	Year:	III	Maximum: 50 Marks	
Course Title:		ORGANIC CHEM	ISTRY – II	
	<u>SI</u>	ECTION – A		
Answer ALL questions			(10 x 1 = 10)	
1. Which of the following con	npounds exhibit cis	/trans isomerism?		
(a) 1-pentene (b)	2-methyl-2-penten	e (c) 2-pentene	(d) 2-methyl-2-bentene	
2. Which of the following is F	ALSE statement re	garding chiral compounds	3?	
(a) Rotate plane polari	zed light	(b) Having cis and tran	ns isomer	
(c) Exists as enantiome	ers	(d) Can be detected by	polarimeter	
3. Which of the following con	npounds will be opt	ically active	-	
(a) Propanoic acid		(b) 3-Chloropropanoic	acid	
(c) 2-Chloropropanoio	c acid	(d) 3-chloropropene		
4. Optical isomers that are not	mirror images are	called		
(a) Diasteriomers	(b) Metame	rs (c) Enantiomer	s (d) Mesocompounds	
5. Diasteriomers can be separa	ated by			
(a) Simple distillation	(b) I	Fractional distillation		
(c) Electrophoresis	(d) r	none of the above		
6. Which type of amine produ	ces N_2 when treated	d with HONO?		
(a) Primary	(b) Second	ary (c) tertiary	(d) none of these	
7. Which of the following is n	nost basic?	5 (7 5		
(a) Ammonia	(b) Methyla	mine (c) Dimethylar	nine (d)Trimethylamine	
8. Reduction of imine will give				
(a) Acid	(b) Amide	(c) Amine	(d) Alcohol	
9. The hybridization of nitroge	en in an amine is	(-)	(1)	
(a) sp	$(b) sp^2$	(c) sn^3	(d) sp^4	
10. Which amine is not soluble	e in water?	(•) ~r	(-) °r	
(a) Methylamine	(b) Dimethylamine	(c) Trimethylamine	(d) All are water soluble	

<u>SECTION – B</u>

(c) NH₃

Answer any FIVE questions

11. State the necessary conditions for the molecules to show optical isomerism?

12. A hydroxyl compuound of formula $C_5H_{12}O$ is optically active. What is its structure?

13. If the specific rotation of one enantiomer of 2-butanol is $+13.5^{\circ}$. What is the specific rotation of the other enantiomer?

Write configurations of the following chiral molecules:

(i) (R)-Glyceraldehyde (ii) (S)-2-Chlorobutane

14. Arrange the following in increasing order of their basic strength.

(a) $C_2H_2NH_2$	(b) $C_6H_5NH_2$
(d) $C_6H_5CH_2NH_2$	(e) $(C_2H_2)_2NH$

15. How will you convert $Cl-(CH_2)_4$ -Cl into $H_3N-(CH_2)_6$ - H_3N

16. How can you explain the fact that trimethylamine boil lower than dimethylamine?

 $(5 \times 2 = 10)$

<u>SECTION – C</u>

Answer any THREE questions

17. Write a note on: (a) Specific rotation (b) Walden inversion

18. Distinguish between(a) Racemic mixture and meso forms(b)

(c) Absolute configuration and relative configuration

19. Discuss any three methods of resolution of racemic mixtures

20. Describe a method for the identification of primary, secondary and tertiary amines. Also write chemical equation of the reaction involved.

- 21. Write chemical equations for the following reactions:
 - (i) Reaction of ethanolic NH_3 with C_2H_5Cl .
 - (ii) Ammonolysis of benzyl chloride and reaction of amine so formed with two moles of CH₃Cl

<u>SECTION – D</u>

Answer any ONE question

22. Illustrate optical activity of an organic molecules without asymmetric carbons

- 23. Write notes on:
 - (i) Hofmann's degradation of amides(ii) Gabriel phthalimide synthesis(iii) Hofmann's elimination reaction(iv) Biuret test.

(c) Geometrical isomerism

(b) Enantiomer and diasteriomer

 $(1 \times 12 = 12)$

VIVEKANA	NDA COLLEGE	. TIRUVEDAKAM	WEST - 625234
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VIVEKANANDA COLLEGE, TIKUVEDAKAM WEST - 625234				
Course Code: 07CT52				Taat
Date: 24.07.2010	Programme:	D.SC., Cuemistdv	CIA: 1 Somos	test
Date: 24.07.2019	Major: Voor		Morrise	
			UFMICTDV	ium: 50 marks
course mile.	<u> </u>		HEMISIKI -	.1
	SI	ECTION – A		(10 1 10)
Answer ALL questions $1 [C_{2}E^{6}]^{3-}$				$(10 \times 1 = 10)$
(a) paramagnetic and under	$a \cos \sin^3 d^2$ hybridis	ation (b) diama	metic and undergo	$a_{2} d^{2} cn^{3} hybridication$
(a) paramagnetic and under	goes sp u flybridiz	ation (d) diama	undergo	bes u sp involuisation
2 Which of the following lig	ands behaves as an	ambidentate ligand?		bes sp inyondisation
(a) NO_2^- (b) SCN	N^- (c) SO ₂	(d) ClO_4		
3. Which of the following is h	exadentate ligand?	(4) 0104		
(a) acetyl acetonato (b) 1.10)-phenontharaline	(c) ethylene diamine	(d) ethylene dia	mine tetra acetic acid
4. The complex [PtCl(NCS)(N	$(H_3)_2$ is capable of	exhibiting	()	
(a) ionization isomerism	(b) linkage isomeri	sm (c) coordination	isomerism (d) d	optical isomerism
5. The difference between the	measured value an	d true value is known	as	1
a) relative error b)	instrumental error	c) absolute error	d) personal err	or
6. Random errors in a measure	ement system are d	ue to		
a) Environmental char	iges b) L	Jse of uncalibrated in	strument	
c) Poor cabling practic	ces d). U	Unpredictable effects		
7. Among the following eleme	ents which one is p	resent as highest perc	entage in Earth's c	crust
(a) Oxygen	(b) Nitrogen	(c) Carbon (d) Hydrogen	
8. The oxidation state of Iron	in deoxy-hemoglob	bin		
(a) + 2	(b) +3	(c) 0 (c)	l) +1	
9. Find out the bulk metals in	human body			
a) Mn, Mo, Co, Cr and	1 N1	(b) Na, K, Mg, Ca	and Cl	
(c) H, C, N, O, P and S) 41	(d) Fe, Zn and Cu		
10. In oxy-nemoglobin the six	(h) Histiding	(a) Durmolo	(d) Oxygon	
(a) mildazole	(b) Histidille	(c) Pyrrole	(u) Oxygen	
Answer any FIVE questions		SECTION - D		$(5 \ge 2 - 10)$
11 Define accuracy				$(\mathbf{J} \mathbf{A} \mathbf{Z} - \mathbf{I} \mathbf{U})$
12. What are the different way	vs of expressing an	error?		
13. What are trace elements?	Give examples.			
14. Write any one biological f	function of sodium	and calcium.		
15. Name the toxicity disease	of copper in human	n beings		
16. What is meant by ambider	ntate ligand? Give of	one example.		
17. Using IUPAC norms write	e the systematic nar	nes of the following:	i) $[Co(NH_3)_6]Cl_3$	ii) $[Ti(H_2O)_6]^{3+}$
	SI	ECTION – C		
Answer any THREE quest	ions			$(3 \times 6 = 18)$
18. Discuss the functions and	structure of haemo	oglobin.		
19. Write the differences betw	een oxyhaemoglob	in and deoxyhaemog	lobin.	
20. What are errors? How are	e they classified?			
21. Write short notes on stru	ctural isomerism in	coordination chemis	iry	
22. Describe Werner's theory	with suitable exam	ple		
Anguan any ONE granter	S	LUTION – D		(1 + 1) = 10
Answer any ONE question	f metals in modicin	e (6)		$(1 \times 12 = 12)$
i) Write a note on i)	$\frac{1}{1} \frac{1}{1} \frac{1}$	\mathbf{v} . (0)		
		\mathcal{O}		

 $[Co (NH_3)_6]^{3+}$

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234				
DEPARTMENT OF CHEMISTRY				
Course Code: 07CT53	Programme:	B.Sc.,	CIA: I Test	
Date: 25.07.2019	Major:	CHEMISTRY	Semester: V	
Time: 2Hrs	Year:	III	Maximum: 50 Marks	
Course Title:		PHYSICAL CH	HEMISTRY-III	
	S	ECTION –A		
Answer ALL questions			(10 x 1 = 10)	
1. The highest electrical cond	uctivity of the follo	wing aqueous solution	is is of	
(a) 0.1 M acetic acid		(b) 0.1 M chloroac	etic acid	
(c) 0.1 M fluoroacetic	acid	(d) 0.1 M difluoroa	acetic acid	
2. In Debye-Huckel-Onsager	equation, the consta	ants A and B depend o	n the	
(a) nature of the solver	nt (b) tempera	ture (c) concen	tration (d) both a & b	
3. Which of the following elements	ctrolytes is not stron	ng one?		
(a) HCl	(b) NaCl	(c) H_2SO_4	(d) CH ₃ COOH	
4. Debye-Huckel-Onsager is a	pplicable to			
(a) weak electrolyte	(b) strong electroly	te (c) all electrolyte	(d) non-electrolyte	
5. The increase in conductance	e of an electrolyte a	at high potential gradie	ent is known as	
(a) asymmetry effect	(b) Wien ef	fect (c) electrophor	retic effect (d) field effect	
6. The specific conductance of	f 0.1 N KClsolution	n at 298 K is 0.012 Oh	$m^{-1}cm^{-1}$. The resistance of the cell	
containing solution at same te	mperature was 35 c	ohm. The cell constant	is	
(a) 0.142 cm^{-1}	(b) 0.616 cm^{-1}	(c) 0.918 cl	m^{-1} (d) 1.12 cm ⁻¹	
7. The number of photons that	t pass through a uni	it area in a unit time is	called	
(a) Amplitude of light	(b) frequency of	f light (c) intensity	of light (d) wavelength of light	
8. The wavelength of ultravio	let and visible regio	ons of electromagnetic	spectrum is	
(a) Less than 2000 Å	(b) more the	an 8000 Å (c) 2000	to 8000 Å (d) less than 8000 Å	
9. The ratio of energy per eins	stein and that of a p	hoton is numbe	r	
(a) Equivalent	(b) Einstein	(c) Lambert's	(d) Avogadro's	
10. The reactions which are c	aused by heat and in	n absence of light are of	called	
(a) Photochemical read	ctions	(b) catalyti	c reactions	
(c) exothermic reaction	ns	(d) thermal	or dark reactions	
	SI	ECTION – B		
Answer any FIVE questions			$(5 \ge 2 = 10)$	

Answer any FIVE questions

- 11. How do specific conductivity and equivalent conductivity vary with dilution why?
- 12. What is transport number? How is it related to velocity of the ions?
- 13. Why Ostwald dilution law is not applicable to strong electrolyte?
- 14. Write Debye Huckel –Onsager equation in complete form explaining the meaning of different quantities.
- 15. Define Grotthus-Draper's law.
- 16. State Stark-Einstein law.
- 17. Define quantum yield.

SECTION – C

- **Answer any THREE questions** 18. How are specific conductivity, equivalent conductivity and molal conductivity of an electrolyte solution related?
- 19. Define Kohlrausch's law and discuss any two of its applications.
- 20. Briefly describe the moving boundary method for the determination of transport number.
- 21. Explain Beer-Lambert's law.
- 22. Compare thermal and photochemical reactions.

<u>SECTION – D</u>

Answer any ONE question

23. (i) Give any five postulates of Arrhenius theory of ionization and its limitations.

- (ii) How does Debye Huckel theory explain the anomalous behavior of strong electrolytes?
- 24. Draw and explain Jablonski diagram.

$(3 \times 6 = 18)$

 $(1 \times 12 = 12)$

VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST - 625234				
Course Code: 07EP51	DEFARIM Drogramme:	B So	CIA. I Test	
Date: 26 07 2019	Major:	D.SC., CHEMISTRV	Semester: V	
Time: 20.07.2019	Majui. Voor		Maximum: 50 Marks	
Course Title:			EMISTRY AND GREEN	
course ritie.	COMPUTE	CHEMISTRY	7	
	<u>i</u> Si			
Answer ALL questions	51	ECTION - A	$(10 \times 1 - 10)$	
1 is the product of d	lata processing		(10 A 1 - 10)	
(a) Data	(b) Information	(c) Software	(d) Computer	
2. Which of the following pieces	of hardware is used th	e most in the input phase of a con	nputer based information system?	
(a) Printer	(b) Diskette	(c) Monitor	(d) Keyboard	
3. Which of the following is a	commonly used in a	cademic testing?		
(a) MICR	(b) POS	(c) OCR	(d) OMR	
4. Nibble is group of b	ytes			
(a) 2	(b) 4	(c) 6	(d) 8	
5. What is the shortcut key to	split a table			
(a) Cltr+Alt+Enter (l	b) Cltr+Shift+Enter	(c) Alt+Shift+Enter	(d) Alt+Space+Enter	
6. The code number for chem	ical reaction arrow	18 (> 2102	(1) 2105	
(a) 2192 (b) 2158	(c) 2103	(d) 2105	
/. The normal synthetic chem	histry is termed as	(a) D		
(a) Green (b)) Brown Chomistry is:	(c) Blue	(d) Red	
(a) Greener products	(b)	Lass substituted products		
(a) Oreener products	(0) roducts (d)	None of the above		
9 The term Green Chemistry	was first used in th	e vear.		
(a) 1989	(b) 1991 (c)	1993 (d) 1995		
10. The expansion of EPA is:				
(a) Energy Protection	Agency	(b) Environmental Protect	tion Agency	
(c) Environmental Pro	otection Agenda	(d) Environmental Preven	tion Agency	
	SI	ECTION – B		
Answer any FIVE questions	8		(5 x 2 = 10)	
11. What is the full from of con	nputer?			
12. What are the 3 main types of	of software?			
13. What are the 4 main compo	nents of a computer?			
14. Define Chemdraw.				
15. Define Green Chemistry.				
16. What do you mean by susta	inability?			
17. what is cleaner production?	, CI	ECTION C		
Answer any THREE questi	one	ECHON - C	$(3 \times 6 - 18)$	
18 Explain the functions of dif	ferent parts of compu	iter using Computer Block Diag	$(\mathbf{J} \mathbf{A} 0 - \mathbf{I} 0)$	
19. Differentiate between Com	outer Hardware and S	oftware.		
20. Explain the application of M	Is word in various fie	elds.		
21. Write down the environment	tal protection laws of	green chemistry.		
22. Calculate the atom economy	y for the following rea	actions.		
$CH_3CH_2CI + P(C_6H_5)_3$	\longrightarrow CH ₃ CH ₂ P(0	C ₆ H ₅) ₃ Cl⁻		
$CH_3CH_2P(C_6H_5)_3CI + N$	laOH —→ CH₃Cł	$H=P(C_6H_5)_3 + NaCI + H_2O$		
CH ₃ CH=P(C ₆ H ₅) + CH ₃	₃CHO —→ CH₃C SI	$CH=CH_2CH_3 + O=P(C_6H_5)_3$ ECTION – D		
Answer any ONE question			$(1 \times 12 = 12)$	

23. What is Number System? Explain different types of Number Systems used in Computers.

24. Discuss briefly about the principles of Green chemistry.

VIVEKAN	ANDA COLLEGE	, TIRUVEDAKAM	WEST - 625234	
DEPARTMENT OF CHEMISTRY				
Course Code: 07SB3A	Programme:	B.Sc.,	CIA: I Test	
Date: 20.07.2019	Major:	CHEMISTRY	Semester: III	
Time: 1Hrs	Year:	II	Maximum: 23	5 Marks
Course Title:	MEDICI	NAL AND PHARMA	CEUTICAL CHEMI	STRY
	SI	ECTION – A		
Answer ALL questions				(5 x 1 = 5)
1. Deep cuts out of rusted ob	jects may result in			(CO1)
a) haemorrhage	b) titanus	c) rashes	d) swelling	
2. The color of blood, when it is bleeding from a vein is			(CO1)	
a) brownish red	b) bluish red	c) blackish red	d) merun red	
3. The best treatment for brol	ken ribs is:			(CO1)
a) to tie with a splint	b) bind the chest	c) give aspirin	d) to lie on a stretcher	ſ
4. The functional group in a	drug responsible for	tits activity is called		(CO2)
a) pharmacophore	b) mycetes	c) chromophore	d) none of the above	
5. Histamine is an	_agent			(CO2)
a) antiallergic	b) antiprotazoal	c) antibacterial	d) antifungal	

SECTION – B

Answer any TWO questions	$(2 \times 2 = 4)$
6. State one similarity and one difference between antiseptic and disinfectant.	(CO1)
7. Briefly quote the immediate treatment for fainting.	(CO1)
8. Write down the contents of first aid box.	(CO1)
9. Define Pharmacophore.	(CO2)

SECTION – C

Answer any ONE questions	$(1 \times 6 = 6)$
10. Give a note on antimetabolites.	CO2)
11. Discuss i)Pharmacodynamics ii)Chemotherapy (CO2)

SECTION – D

Answer any ONE question	$(1 \times 10 = 10)$
12. Jot down the basic rules of first aid. Write the same for i) bleeding ii) burns.	(CO1)
13. Explain the biological classification of drugs.	(CO2)
