_	III B. Sc Cl	hemistry	
Dept. of Chemistry Vivekananda College Tiruvedakam West Data: 10, 01, 2010			I Sessional Test VI Semester Max. Marks: 50 Time: 2 Hours
Date: 10.01.2019 NAN	OCHEMIST	FRY- (07EP62)	1 me. 2 mours
	SECTIO	$\mathbf{N} - \mathbf{A}$	(10 1 10)
1 What is the size of a quantum dots	?		$(10 \times 1 = 10)$
a) 5 nm b) 10 n	m	c) 20 nm	d) 50 nm
2. In quantum dots the energy bandge	an depends or	1 C) 20 IIII	<i>a)</i> 50 mm
a) Surface area b) Volu	ime	c) Size	d) All of these
3. Metal that resists chemical action,	does not corr	ode, and is not easily	attacked by acids is called
a) Super insulators b) Idea	l insulators	c) Base metals	d) Noble metals
4. What is the chemical formula of m	agnetite?		
a) Fe_2S_3 b) Fe_3C_3	D_4	c) FeCO ₃	d) Fe_3S_4
5 is used to molecula	r cell – assen	nbly.	
(a) nanosensor (b) nan	oscale	(c) nanorobot	(d) nanotube
6. The silicon nanowires can act as			
(a) superconductor (b) gas sensor	(c) reducing	agent(d) photocatalys	st
7. Nanosensors will innovate the way	vs air and wat	er quality is measured	l
(a) Surface absorption Raman spe	ctroscopy (SA	ARS)	
(b) Surface Plasmon Resonance sp	pectroscopy (SPRS)	
(c) Surface Enhanced Raman spec	ctroscopy (SE	RS)	
(d) Surface Enhanced Atomic Ford	e microscopy	y (SEAFM)	
8. NEMS stand for			
(a) Nano –electron mechanical sy	stem	(b) Nano –elastic m	echanical system
(c) Nano –electron membrane sys	stem	(d) Nano –electron	multiple system
9. The prefix "nano" comes from a			
a) French word meaning billion	b) Greek	word meaning dwarf	
c) Spanish word meaning particle	d) Latin v	word meaning invisibl	
10. Richard Feynman is often credite	a with predic	asphar 20, 10502	anotecnnology. What
a) There is a tiny room at the bett	i given on De	Things get nonosconi	a at the bottom
a) There is a tiny room at the bott	(0 1110. d)	There is plenty of roo	c at the bottom
c) Bottom? what bottom?	u)	There is plenty of 100	
	SECTIO	N - B	
Answer any FIVE questions			$(5 \ge 2 = 10)$
11. Define nanobiology			
12. What is meant by quantum dots?			
13. Give any four advantages of nobl	e metal nanoj	particles.	
14. Why the properties of different m	laterials at na	noscale change?	
15. Define sensor.	noscale		
17. What is nanochemistry?	illoscale.		
17. What is handeneniistry:			
	SECTIO	N - C	
Answer any THREE questions			$(3 \times 6 = 18)$
18. Write a short note on semiconduc	ctor nanocryst	tals.	
19. What do you know about magnet	ic nanopartic	les?	
20. What is the role of cyclic voltame	nograms in n	anosensors?	
21. Explain in briefly the electrochem	nical sensors		
22. What are the connections betwee	n nanotechno	logy and biology?	
	SECTIO	$\mathbf{N} - \mathbf{D}$	
Answer any ONE question	520110		$(1 \times 12 = 12)$
23. Discuss the interaction between b	oiomolecules	with nanoparticles sur	faces
• · • • • • •			

24. How will you discuss the concepts of nano - biosensors?

Dept. of Chemistry Vivekananda College Tiruvedakam West Date: 10.01. 2019

I B.Sc., Botany

I Sessional Test II Semester Max. Marks: 50 Time: 2 Hours

CHEMISTRY FOR BIOLOGIST -II (07ATB2)

<u>SECTION – A</u>

nswe	er ALL questions				(10 x 1 = 10)
1.	According to the I	Bronsted-Lowry Theo	ory an acid breaks up in	nto	<i>C01</i>
	(a) an acid-base pa	air (t) a conjugate base and	l a proton	
	(c) an acid and a	proton (d	l) a conjugate acid and	a proton	
2.	Which of the follo	wing ions do all acid	s have in common?		<i>C01</i>
	(a) OH ⁻	(b) Ca^{2+}	(c) H^+	(d) Na^+	
3.	Which one of the	following is acidic?			<i>C01</i>
	(a) Lemon juice	(b) Tomat	oes (c) Milk	x (d) All	
4.	Phenolphthalein in	n acidic solution is			<i>C01</i>
	(a) colorless	(b) pink colour	(c) yellow colour	r (d) orar	ige colour
5.	Which one of the	following is an exam	ple for acid according	to Usanovich concept?	? CO1
	(a) SiO ₂	(b) Na_2O	(c) SO ₃	(d) $AlCl_3$	
6.	Complete transfer	of one or more electr	rons from one atom to	different atom forms	<i>CO2</i>
	(a) ionic bonds	(b) covalent bone	ds (c) metallic bond	ls (d) co-ordinate	bond
7.	A type of cycle w	hich is used to calcula	ate lattice energy is		<i>CO2</i>
	(a) Hess's law	(b) Born-Haber of	cycle (c) Haber	r process (d) conta	ict process
8.	The polarity of a c	covalent bond is due t	0		<i>CO2</i>
	(a) lesser electron	egativity difference b	etween two atoms (I	b) greater electronegat	ivity
	difference between	n two atoms (c) lesser bond energy	(d) greater bond er	nergy
9.	Electron sea exists	s in			<i>CO2</i>
	(a) polar bond	(b) ionic bond	(c) covalent bone	d (d) meta	allic bond
10	. Conductance of el	ectricity in metallic b	onding is due to		<i>CO2</i>
	(a) protons	(b) lattice	(c) delocalized e	lectrons (d) nucl	eus
			SECTION D		

<u>SECTION – B</u>

Answer any FIVE questions	$(5 \mathbf{x} 2 = 10)$
11. Define pH	<i>C01</i>
12. BF ₃ is Lewis acid. Comment	<i>C01</i>
13. What do you understand from the term 'amphiprotic'?	<i>C01</i>
14. What are the limitations of Arhenious acid-base concept?	<i>C01</i>
15. What is ionic bond?	<i>CO2</i>
16. Define lattice energy.	<i>CO2</i>
17. What is polar covalent bond? Give an example	<i>CO</i> 2

<u>SECTION – C</u>

Answer any THREE questions	$(3 \times 6 = 18)$
18. Explain the following (i) Lux-Flood concept ii) Cady-Elsey concept	<i>C01</i>
19. Discuss Lewis acid-base concept	<i>C01</i>
20. Explain the characteristics of ionic compounds	<i>CO2</i>
21. Outline the properties of covalent bond	<i>CO2</i>
22. Discuss hydrogen bonding and its types	<i>CO2</i>

<u>SECTION – D</u>

	$(1 \times 12 = 12)$
llowing:	
(ii) Bronsted – Lowry concept	<i>C01</i>
g lattice energy	<i>CO2</i>
	llowing: (ii) Bronsted – Lowry concept g lattice energy

I B.Sc., PHYSICS

Dept. of Chemistry

Tiruvedakam West Date: 10 .01.2019

Vivekananda College

I Sessional Test II Semester Max. Marks: 50 Time: 2 Hours

CHEMISTRY FOR PHYSICIST – II (07ATP2)

SECTION – A

	Multiple choice questions:	
	Answer ALL questions	(10 x 1 = 10)
1)	A photochemical reaction takes place by the absorption of	(CO2)
	(a) Visible and ultraviolet radiations (b) Infrared radiations	
	(c) Heat energy (d) Gamma rays	
2)	The wavelength of ultraviolet and visible regions of electromagnetic spectrum is	(CO2)
	(a) Less than 2000 Å (b) 2000° to 8000 Å	
	(c) More than 8000 Å (d) 8000° to 10000 Å	
3)	A solution of quinine sulphate on exposure to visible light exhibits	(CO2)
	(a) Phosphorescence (b) Fluorescence (d) Chemiluminescence (d) Bioluminescence	e
4)	The glow of fireflies is due to the aerial oxidation of luciferin. It is an example of	(CO2)
	(a) Fluorescence (b) Phosphorescence (c) Bioluminescence (d) Chemiluminesce	nce
5)	Which of the following statements about the photochemical reactions is true?	(CO2)
	(a) The presence of light is the primary requirement for reactions to take place	
	(b) Temperature has a very little effect on the rate of photochemical reactions	
	(c) ΔG for photochemical spontaneous reactions may +ve or -ve	
	(d) All of the above	
6)	One Faraday iscoulombs.	(CO4)
	(a) 95000 (b) 95500 (c) 96000 (d) 96500	
7)	Which of the following is not a strong electrolyte?	(CO4)
	(a) KNO_3 (b) CH_3CO_2H (c) KCl (d) $NaClO_4$	
8)	The equivalent conductance of a solution of an electrolyte	(CO4)
	(a) increases with dilution (b) decreases with dilution	
	(c) does not vary with dilution (d) First increases and then decrease	es
9)	The units of specific conductance are	(CO4)
	(a) ohm cm (b) ohm cm ^{-1} (c) ohm ^{-1} cm (d) ohm ^{-1} cm ^{-1}	
10)	Anions move towards	(CO4)
	(a) Cathode (b) Anode (c) both cathode and anode (d) First anode an	d then cathode
	<u>SECTION – B</u>	
	Very short answer	
	Answer any FIVE questions	$(5 \times 2 = 10)$
11)	Define photochemical reactions.	(CO2)
12)	Expand ISC and IC.	(CO2)
13)	State Grothus Draper law.	(CO2)
14)	Write the differences between electrochemical reaction and electrolysis.	(CO4)
15)	Define cell constant.	(CO4)
16)	Define conductance.	(CO4)
17)	Write the difference between strong electrolyte and weak electrolyte.	(CO4)
	<u>SECTION – C</u>	
	Short answer	(2 - (19)
18	Explain Beer-I ambert law and write the limitations	$(5 \times 0 = 18)$
10)	Write the differences between photochemical and thermal reactions	(CO2)
$\frac{1}{20}$	Write a note on i) Quantum vield and ii) Bioluminescence	(CO2)
20)	Write a note on	(CO2)
21)	i) Specific conductance ii) Equivalent conductance (iii) Molel conductance	(CO4)
)	The resistance of decinormal solution of a solt occupying a volume between	two platinum
LL)	a point resistance of decinormal solution of a sait occupying a volume between a_{1}^{2} and a_{2}^{2} an	the acquired art
	circuloues 1.00 cm apart and 3.4 cm in area was found to be 32 onms. Calculate	une equivalent
		(004)
	$\frac{\Delta E U \Pi U N - D}{\Delta n s war any ONE question}$	$(1 \times 12 - 12)$
		$(1 \land 12 - 12)$

Dept. of Chemistry Vivekananda College Tiruvedakam West Date: 10 .01. 2019 I Sessional Test II Semester Max. Marks: 50 Time : 2 Hours

CHEMISTRY FOR BIOLOGIST-II (07ATZ2)

SECTION – A

Answer ALL questions	(10 x 1 = 10)
1. Complete transfer of one or more electrons from one atom to different atom for	rms (CO2)
(a) ionic bonds (b) covalent bonds (c) metallic bonds (d) co-ordinat	te bond
2. As compared to ionic compounds, covalent bond has	(CO2)
(a) high melting but low boiling point (b) low melting and high boil	ing point
(c) low melting and boiling point (d) high melting and b	poiling point
3. The compounds which contain both ionic and covalent bonds are	(CO2)
(a) $\dot{C}HCl_3$ and CCl_4 (b) KCl and AlCl ₃ (c) KCN and NaOH	(d) H_2 and CH_4
4. Electron sea exists in	(CO2)
(a) polar bond (b) ionic bond (c) covalent bond (d) me	etallic bond
5. Conductance of electricity in metallic bonding is due to	(CO2)
(a) protons (b) lattice (c) delocalized electrons (d) nucleus	
6. Which one the following represents the form of glycine in aqueous solution of	low pH? (CO3)
(a) $H_3^+NCH_2COOH$ (b) $H_2^+N CH_2COOH$ (c) $H_2NCH_2COO^-$	(d) H ₂ N CH ₂ COOH
7. An example of a fibrous protein is	(CO3)
(a) mucin (b) globin (c) keratin (d) casein	~ /
8. Which one of the following protein transport oxygen in the body?	(CO3)
(a) Keratin (b) nucleoprotein (c) Haemoglobin (d) insulin	()
9. Which one of the following reaction can be used for the synthesis of α -amino a	cids? (CO3)
(a) Gabriel phthalimide (b) Erlenmever azlactone	()
(c) Strecker synthesis (d) all of these	
10. Which one the following acids is capable of forming Zwitter ion?	(CO3)
(a) Halo acid (b) Hydroxy acid (c) α -amino acid (d) Nitro acid	()
SECTION – B	
Answer any FIVE questions	$(5 \ge 2 = 10)$
11. What is covalent bond?	(CO2)
12. Define lattice energy.	(CO2)
13. What do you mean by polar covalent bond? Give an example.	(CO2)
14. What are amino acids? Give an example.	(CO3)
15. What is Zwitter ion? Give an example.	(CO3)
16. Discuss any two properties of α -amino acids.	(CO3)
17. What is a simple definition of protein?	(CO3)
SECTION – C	()
Answer any THREE questions	$(3 \times 6 = 18)$
18. Describe the characteristic ionic compounds.	(CO2)
19. State and explain Faian's rule.	(CO2)
20. Discuss hydrogen bonding and its types.	(CO2)
21. Write notes on: (i) Gabriel phthalimide and (ii) Strecker synthesis.	(CO3)
22. Write briefly on the biological functions of proteins citing suitable examples.	(CO3)
SECTION – D	(
Answer any ONE question	$(1 \times 12 = 12)$
23. Explain Born-Haber cycle for calculating lattice energy.	(CO2)
25. Explain Dom Huber Cycle for calculating lattice chergy.	(CO2)

24. Classify the proteins on the basis of their molecular shape and their chemical composition.(CO3)

I B.Sc-Chemistry	
Dept. of Chemistry	I Sessional Test
Vivekananda College	II Semester
Tiruvedakam West	Max. Marks: 50
Date: 07.01. 2019	Time: 2 Hours
GENERAL CHEMISTRY-III (0	7CT21)
SECTION – A	
Answer ALL questions	(10 x 1 = 10)
1. Which type of overlapping is shown by $p(p_x, p_y)$ and p_z)-orbitals? (CO1)
(a) two end to end and one sidewise overlap (b) two si	dewise and one end to end overlap
(c) three sidewise overlaps (d) three e	end to end overlaps
2. A π -bond is formed by the overlap of	(CO1)
(a) <i>s-s</i> orbitals (b) <i>s-p</i> orbitals	
(c) p - p orbitals in end to end fashion (d) p - p orbitals in	n sidewise manner
3. Polarisation is the distortion of the shape of an ar	nion by the cation. Which of the
following statements is correct?	(CO1)
(a) maximum polarisation is done by a cation of high a	charge
(b) a large cation is likely to bring large degree of pola	risation
(c) a smaller anion is likely to undergo a high' degree of	of polarisation
(d) minimum polarisation is done by a cation of small	size
4. In an octahedral structure, the pair of d-orbitals involve	ed in d^2sp3 hybridization is: (CO1)
(a) $d_x 2 - y^2$, $d_z 2$ (b) d_{xz} , $d_x 2 - y^2$ (c) $d_z 2$, d_x	$(d)d_{xy}, d_{yz}$
5. <i>o</i> -hydroxybenzaldehyde is a liquid at room temperatur	e while p-hydroxybenzaldehyde is
a high melting solid because of	(CO1)
(a) hydrogen bonding (b) ionisation energy	
(c) lattice energy (d) electron gain enthalp	У
6. the concentration of a solution is defined as	(CO4)
(a) the amount of solvent present in a given amount of	solution
(b) the amount of solute present in a given amount of s	solution
(c) the amount of solute present in a given amount of s	solvent
(d) the amount of solvent present in a given amount of	solute
7. Completely miscible solution can be separated by	(CO4)
(a) a separating funnel (b) evaporation (c) fractional di	istillation (d) all of the above
8. Which of the following does not depend upon the temp	perature? (CO4)
(a) molarity (b) molality (c) formality (d) normality	
9. In one molal solution that contains 0.5 mole of solute t	here is (CO4)
(a) 1000 g of solvent (b) 1000 ml of solvent (c) 500 ml	of solvent (d) 500 g of solvent
10. Completely miscible solution can be separated by	(CO4)
(a) a separating funnel (b) evaporation (c) fractional di	stillation (d) all of the above
SECTION – B	
Answer any FIVE questions	(5 x 2 = 10)
11. Compare sigma bond and pi bond	(CO1)
12 Headoes not exist Why?	(CO1)

12. He2 does not exist. Why?(CO1)13. H2O is liquid while H2S is gas. Give reason.(CO1)14. Define Raoult's law.(CO4)15. Define Henry's law.(CO4)16. What is mean by Azeotropes?(CO4)17. Compare total and partial vapour pressure.(CO4)

SECTION – C

Answer any THREE questions	$(3 \times 6 = 18)$
18. Explain sp^2 and sp^3 hybridizations with suitable examples.	(CO1)
19. Draw and explain MO diagram of N_2 and O_2 molecules.	(CO1)
20. Define Lattice energy. How will you calculate lattice energy by experiment	tal method?
	(CO1)
21. Define the following concentration terms:	(CO4)
(i) Molality (ii) Molarity (iii) Normality (iv) Mole fraction	
22. Discuss in detail the fractional distillation of binary liquid solutions.	(CO4)

SECTION - D

Answer any ONE question (1 x 12 = 12) 23. Write the postulates of VSEPR theory. Explain the shape of CH₄, NH₃ and H₂O based on VSEPR theory. (CO1) 24. Dimensional distribution of the postulation of the postulatis of the postulation of the postulation of the postulation of the

24. Discuss the variation of vapour pressure and boiling point of completely miscible liquid pairs with composition. (CO4)

I-B.Sc. CHEMISTRY

Answer any ONE question

I Sessional Test II Semester Max. Marks: 50 Time: 2 Hours

GENERAL CHEMISTRY -IV (07CT22)

SECTION – A

An	swer ALL questions	(10 x 1 = 10)
1.	Diethyl ether on heating with conc. HI gives two moles of	(CO2)
	a) Ethanol b) Iodoform c) Ethyl iodide d) Methyl iodide	
2.	The isomerism exhibited by ethers but not exhibited by alcohols is	(CO2)
	a) Functional isomerism b) Chain isomerism c) Metamerism d) none of these	
3.	Williamson synthesis proceed visa which of the following mechanism?	(CO2)
	a) $S_N 1$ b) $S_N 2$ c) E1 d) E2	
4.	As temperature increases, the reaction rate	(CO5)
	a) decrease than increase b) decreases c) increases d) stays the same	
5.	A reaction in which all reactants are in the same phase is called	(CO5)
	a) elementary b) bimolecular c) homogeneous d) heterogeneous	
6.	Tetraethyl lead (TEL) is a	(CO3)
	a) anti-knock agent b) it raises octane number of petrol	
	c) organometallic reagent d) all of these	
7.	What is the hybridization of Zn in dialkyl zinc compounds	(CO3)
	a) sp b) sp ² c) sp ³ d) no-hybridisation	
8.	Corey and House developed the following organometallic reagents	(CO3)
	a) lithium dialkyl copper b) alkyl lithium c) dialkyl zinc c) tetraethyl lead	
9.	In photochemical reactions, the absorption of light takes place in	(CO4)
	a) primary process only b) secondary process only	
	c) both primary and secondary process d) either primary or secondary process	
10.	. "Absorbance of a sample is directly proportional to its path length". This statement is relate	ed with (CO4)
	a) Lambert's law b) Beer's Law c) Stark Einstein Law d) Beer-Lambert's	law

SECTION – B

Answer any FIVE questions	$(5 \times 2 = 10)$
11. How will you synthesis anisole from benzene?	(CO2)
12. Why is HI a better reagent than HBr in the cleavage of a typical S_N1 or S_N2 mechanism?	(CO2)
13. What is meant by specific rate or rate constant?	(CO5)
14. State different laws of photochemistry	(CO4)
15. Choose any four difference between thermal reaction and photochemical reaction	(CO4)
16. What is Reformatsky reaction?	(CO3)
17. Define the term photosensitization and give the mechanism of photosynthesis	(CO4)

SECTION – C

Answer any THREE questions	$(3 \times 6 = 18)$
18. Compare the mechanism for the formation of ether by intermolecular dehydration of	f 1° , 2° and 3°
alcohols.	(CO2)
19. Outline the factors that affect the rate of chemical reaction.	(CO5)
20. Summarize on (a) Chemiluminescence (b) Bioluminescence	(CO4)
21. Discuss the preparation and synthetic importance of Gilman reagents	(CO3)
22 Convert the following: (i) Δcyl halide to ethyl methyl ketone (ii) acetaldehyde to see	condary alcohol (i

22. Convert the following: (i) Acyl halide to ethyl methyl ketone (ii) acetaldehyde to secondary alcohol (iii) Frankland reagent from trimethyl aluminium. (CO3)

SECTION – D

$(1 \times 12 = 12)$

23. Discuss the mechanism of cleavage of Anisole by acids and chemical properties of Anisole. (CO2)
24. Draw and discuss the Jablonski diagram for depicting various photophysical phenomena in photochemistry. (CO4)

II B.Sc., CHEMISTRY

Dept. of Chemistry Vivekananda College Tiruvedakam West Date: 07.01.2019 I Sessional Test IV Semester Max. Marks: 50 Time : 2 Hours

Organic and Physical Chemistry (07CT41)

SECTION –A

Answer ALL questions		_	(10 x 1 = 10)
1) An example of polysacch	naride is		
a) Starch	b) Galactose	c) Glucose	d) Lactose
2) Which one of the following	ing pairs are examples of epi	mers?	
a) Glucose & Galactose	b) Glucose & Ribose	c) Fructose& Glucose	d) Galactose & Ribose
3) The distinguishing test be	etween monosaccharides and	l disaccharides is	
a) Bial's test	b) Selwanoff's test	c) Barfoed's test	d) Hydrolysis test
4) What is the molecular fo	rmula of sucrose?		
a) $C_{12}H_{20}O_{11}$	b) $C_{10}H_{20}O_{10}$	c) $C_6 H_{12} O_6$	d) C ₁₂ H ₂₂ O ₁₁
5) The general formula of c	arbohydrate is		
a) $(CH_2O)_{2n}$	b) (CHO) _n	c) $C_n H_{2n} O$	d) $(CH_2O)_n$
6) The name formic acid is	derived from		
a) Formica	b) Acetum	c) Lactum	d) Septum
7) Which one is strong base	ed on acidity		
a) Formic acid	b) acetic acid	c) Propionic acid	d) Cholroacetic acid
8) The term $\mathbf{K}_{\mathbf{D}}$ is defined a	S		
a) Partition co-efficient	b) Partition law	c) Partition efficiency	d) Partition parameter
9) When the solutions are d	ilute, then $\mathbf{K}_{\mathbf{D}}$ is given by		
a) P_1/P_2	b) C_1/C_2	c) S_1/S_2	d) T_1/T_2
10) The distribution law is	valid only at		
a) Constant 'R'	b) Constant 'P'	c) Constant 'V'	d) Constant 'T'
	SECTION -	<u>– B</u>	
Answer any FIVE questio	ns		(5 x 2 = 10)
11) What are trisaccharides	? Give example.		
12) Define glycosidic linka	lge.		
13) Draw the cyclic structu	re of α -D-glucose and β -D-g	lucose.	
14) Draw the structure of c	ellulose.		
15) Write any Four physica	al properties of formic acid.		
16) How will you prepare a	acetic acid from n-Butane?		
17) Define Nernst Distribut	tion law.		
	<u>SECTION –</u>	<u>C</u>	
Answer any THREE ques	tions		$(3 \times 6 = 18)$
18) Illustrate the conversion	n of glucose into fructose.		
19) Explain mutarotation.			
20) What are epimers? Der	nonstrate epimerization with	example.	
21) Sketch out the synthesi	s methods for formic acid.		
22) Derive $\mathbf{K}_{\mathbf{D}}$ for a solute	A present in two immiscible	solvents 1& 2.	
	<u>SECTION –</u>	<u>D</u>	
Answer any ONE question	n		$(1 \times 12 = 12)$
23) a) What happens when	glucose is treated with the fo	ollowing: (8)	
i) HI/P ii) NH ₂	OH iii) Br_2/H_2O iv) H	ICN	
b)Write a note on Killia	ani-Fischer synthesis. (4)	
24) Compare the formic an	d acetic acid based on their c	chemical properties.	

I Sessional Test IV Semester Max. Marks: 50 Time : 2 Hours

INORGANIC CHEMISTRY-I (07CT42)

SECTION – A

 $(10 \times 1 = 10)$

Answer ALL questions 1. BCl_3 does not exist as dimer but BH_3 exist as dimer (B_2H_6) because

- (a) chlorine is more electronegative than hydrogen
- (b) there is $p\pi$ - $p\pi$ back bonding in BCl₃ but BH₃ does not contain such multiple bonding
- (c) large size chlorine atom do not fit in between the small born atom whereas small sized hydrogen atom get fitted in between boron atom. (d) all of the above
- 2. Which of the following is false statement?
 - (a) BH_3 is not a stable compound (b) All the B-H bond distance in B_2H_6 are equal
 - (c) Boron hydride are formed when dil.HCl reacts with Mg₃Br₂
 - (d) The boron hydride are readily hydrolysed
- 3. The hydride of group III-A element behave as lewis acids. The acceptor ability is maximum for the hydride of:
 - (a)Tl (b)Ga (c) Al (d) B
- 4. In diborane?
 - (a) 4 bridged hydrogen and two terminal hydrogen are present
 - (b) 2 bridged hydrogen and four terminal hydrogen are present
 - (c) 3 bridged hydrogen and three terminal hydrogen are present (d) None of the above
- 5. BF_3 is used as a catalyst in several industrial processes due to its: (a) Strong reducing nature (b) Weak reducing action (c) Strong lewis acid nature (d) Weak lewis acid character
- 6. Which one is strong acid
- (b) HCl (a)HF (c) HBr (d) HI
- 7. Which one of the halogen has highest heat of hydration (b) Cl (c) Br (a) F (d) I
- 8. Pick out the pseudohalogen in the following (c) NH₃ (a) (CN)₂ $(b)H_2O$ (d) HCl
- 9. Select the polyhalide from the following (b) F⁻ (a) I_9^{-1} $(c) Cl^{-}$ (d) I_4^{-} 10. Which one is lewis base $(a)BF_3$ $(b)H_2O$ (c) NH_3 (d) HCl

SECTION - B

Answer any FIVE questions

- 11. BH₃ unstable but BF₃ is stable why?
- 12. How many 2c-2e and 3c-2e electrons present in diborane compound?
- 13. Why does boron behave as a lewis acid?
- 14. BH₃ unstable but B_2H_6 is stable why?
- 15. What is meant by HSAB concept?
- 16. Define Lowry-Bronsted concept of acid base
- 17. What is symbiosis? Given an example

SECTION – C

Answer any THREE questions

Answer any ONE question

- 18. Write note on preparation and properties of diborane.
- 19. Draw the structure of following higher boranes (i) B_5H_9 (ii) B_6H_{10} and (iii) $B_{10}H_{14}$
- 20. Define wade's rule. Find out the number of electron present in the following higher boranes: (i) B_2H_6 (ii) B_5H_{11} and (iii) $B_{10}H_{14}$
- 21. Explain modern method of isolation of fluorine
- 22. Describe estimation of available chlorine in bleaching powder

SECTION – D

 $(1 \times 12 = 12)$

- 23. Discuss in detail the structure and bonding of diborane.
- 24. Write short notes on poly halides and pseudohalogens

 $(5 \times 2 = 10)$

 $(3 \times 6 = 18)$

III	B.Sc., CHEMISTRY	
Dept. of Chemistry Vivekananda College Tiruvadakam Wast		I Sessional Test VI Semester Max Marks: 50
Date 08.01 2019		Time • 2 Hours
Organi	c Chemistry-III (07CT61)	Time · 2 Hours
8	SECTION – A	
Multiple choice questions:		
Answer ALL questions		(10 x 1 = 10)
1) The correct decreasing order of various e	nergy levels are	
a) Vibrational > Rotational > Electronic	b) Rotational > Vibrational >	- Electronic
c) Electronic > Vibrational > Rotational	d) Electronic > Rotational > V	Vibrational
2) The correct increasing order of the variou	is electronic transitions is	
a) $n \to \pi^* < \pi \to \pi^* < \sigma \to \sigma^* < n \to \sigma^*$	b) $\Pi \to \Pi^* \le n \to \Pi^* \le n \to c$	$\sigma^* < \sigma \rightarrow \sigma^*$
c) $n \to \pi^* < \pi \to \pi^* < n \to \sigma^* < \sigma \to \sigma^*$	d) $\sigma \rightarrow \sigma^* < n \rightarrow \sigma^* < \pi \rightarrow \pi$	$I^* < n \rightarrow \Pi^*$
3) In IR spectrum, the carbonyl stretching fr	requency occurs at	
a) 1650-1700 cm ⁻¹ b) 1550-1650 cm ⁻¹	c) 1700-1750 cm	d) 1750-1800 cm ⁻¹
4) In FT-IR spectrum, the -OH stretching ba	and appears around $1700 \ 1750 \ ^{-1}$	$1) 22000 2100 ^{-1}$
a) 3100-3300 cm b) 3500-3650 cm	c) $1/00-1/50$ cm	d) 2800-3100 cm
a) Pakalita b) Nylon 6 6	g polymer?	d) Tefler
6) Teflon is prepared by the polymerization	of	d) Tenon
a)Butadiene b)Vinylcyanide	c)Vinyl chloride	d) Tetrafluoro ethylene
7) Natural rubber is a polymer of	c) v myr emorrae	u) Tettalitatio etityteite
a) propene b)isoprene	c) formaldehvde	d) phenol
8) Which one following is act as catalyst in	Fries rearrangement	
a) Anhy.AlCl3 b) NaOH	c) HCl	d) Zu dust
9) No of isoprene unit present in Diterpene	is	
a) 1 b) 4	c) 2	d) 3
10) α -isomer of citral is called as		
a) Nerol b) Citrol	c) Geranial	d) Geraniol
	<u>SECTION – B</u>	
Answer any FIVE questions	······································	$(5 \ge 2 = 10)$
i) CH ₂ Cl ii) Cl ₂	ssible in the following compounds	8:
12) An organic compound in hexane exhibits λ	$m_{\rm m} = 305$ nm and in ethanol show	$x \approx \lambda_{max} = 307 \text{ nm}$ What should be
the nature of transition?	$\max = 505$ min and m centerior show	
13) What do you mean by fingerprint region in	IR spectra?	
14) Define homopolymer and co polymer		
15) What is meant by Beckmann rearrangemen	t	
16) Define Isoprene Rule with examples	aaid	
(17) How will you convert benzyl into benzinc	SECTION - C	
Answer any THREE questions	<u>SECTION - C</u>	$(3 \times 6 = 18)$
18) Discuss the effect of conjugation in UV spe	ctra.	$(\mathbf{c} \mathbf{A} \mathbf{c} - \mathbf{I} \mathbf{c})$
19) Explain auxochrome and chromophore with	examples?	
20) Campare the Hofmann and Curtius rearrang	ement	
21) Write down the synthetic pathways for Citra	al from Methylheptenone	
22) Elucidate the structure of Citral	SECTION D	
Answer any ONE question	<u>SECTION – D</u>	$(1 \ge 12 - 12)$
23) a) Calculate the λ for the following com	nounds (8)	$(1 \times 12 - 12)$
2.5, u) calculate the <i>n</i> max for the following collin	,	
		\frown
i) ii) iii) iii	i) iv)	
h) Define the following: i) Dethe transition 1.10.11) Uumaa ahuania ahifi	λ.
iii) Hyperchromic shift	iv) Hypochromic shift (1)	
24) Explain in detail addition polymerization re	eaction with suitable example	

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III B. Sc Chemistry

I Sessional Test **VI Semester** Max. Marks: 50 **Time: 2 Hours**

PHYSICAL CHEMISTRY-IV (07CT62)

<u>SECTION – A</u>

(10 x 1 = 10)

Answe	er ALL questions (10 x 1 = 10)		
1.	The rate of reaction of spontaneous reaction is generally very slow. This is due to the fact that.		
	(a) The equilibrium constant of the reaction is < 1 (b) The activation energy of the		
	reaction is large (c) The reaction are exothermic (d) All the above three are correct		
2.	Appropriate units for a first-order rate constant are		
	(a) M/S (b) $1/M \cdot S$ (c) $1/S$ (d) $1/M^2 S$.		
3.	A zero order reaction is one whose rate is independent of		
	(a) Reaction vessel volume (b) Concentration of reactants		
	(c) Temperature (d) Pressure of light		
4.	Which of the following statements is incorrect about the molecularity of a reaction?		
	(a) Molecularity of a reaction is the number of molecules in the slowest step.		
	(b) Molecularity of a reaction is the number of molecules of the reaction present in the		
	balanced equation.		
	(c) There is no difference between order and molecularity of a reaction.		
	(d) Molecularity is always a positive whole number.		
5.	The molecule with smallest rotational constant (in the microwave spectrum) among		
	the following is		
	(a) $N \equiv CH$ (b) $HC \equiv CCl$ (c) $ClC \equiv CF$ (d) $B \equiv CCl$		
6.	Where on the electromagnetic spectrum is visible light found?		
	(a) Between infrared rays and UV rays (b) Between radio waves and microwaves		
	(c) Between X-rays and gamma rays (d) Between x-rays and UV rays		
7.	Which of the following is an application of molecular spectroscopy?		
	(a) Structural investigation (b)Basis of understanding of colors		
	(c) Study of energetically excited reaction products (d) All of the mentioned		
8.	The force constants for CO and CS are 1902 and 849 N m^{-1} respectively. Which		
	statement is <i>incorrect</i> ?		
	(a) Less energy is required to dissociate CS than CO		
	(b) The wavenumber associated with the stretching of CO is higher than that of CS		
	(c) The trend in bond energies for CO and CS follows the trend in force constants		
0	(d) Stretching the bond in CO requires less energy than stretching the bond in CS		
9.	Which of the following transitions between rotational energy levels is <i>not</i> allowed?		
	(a) $J = 1 \rightarrow J = 0$ (b) $J = 0 \leftarrow J = 1$		
10	(c) $J = 1 \leftarrow J = 3$ (d) $J = 1 \leftarrow J = 2$		
10.	Select the incorrect option from the following option.		
	(a) IR spectroscopy helps in determination of purity		
	(b) IR spectroscopy helps in determination of force constant from vibrational spectrum		
	(c) IR spectroscopy helps in identifying an unknown compound		
	(d) None of the mentioned		

Answer any FIVE questions

11. Define rate constant.

- 12. Write the difference between thermodynamic and chemical kinetics
- 13. Why are the reactions of higher order rare?
- 14. The initial concentration of N_2O_5 in the following first order reaction

 $N_2O_5(g) \rightarrow 2 \text{ NO}_2(g) + 1/2O_2(g)$ was $1.24 \times 10^{-2} \text{ mol } L^{-1}$ at 318 K. The concentration of N_2O_5 after 60 minutes was $0.20 \times 10^{-2} \text{ mol } L^{-1}$. Calculate the rate constant of the reaction at 318 K.

- 15. Which of the following molecule will show a pure rotational spectrum? Why? H₂, HCl, CO, H₂O (liquid), NH₃, NH₄Cl
- 16. Give the pictorial representation of electromagnetic spectrum
- 17. Mention the factor that affects the intensity and wavenumber in IR spectroscopy?

SECTION – C

Answer any THREE questions

- 18. Write the difference between order and molecularity
- 19. Calculate the moment of inertia, *I*, of the molecule ${}^{1}\text{H}^{35}\text{Cl}$. The masses of the two atoms are $m_{\text{H}} = 1.673 \text{ x } 10^{27} \text{ kg}$ and $m_{\text{Cl}} = 5.807 \text{ x } 10^{26} \text{ kg}$. The equilibrium bond length of the molecule is 1.275 Å
- 20. Deduce an equation for vibrational spectra of diatomic molecules
- 21. Discuss classical theory of Raman spectroscopy
- 22. In IR spectrum of $[Co(CN)_5H]^{3-}$ the Co-H stretching frequency is observed at 1840 cm⁻¹. Calculate the Co-D stretching frequency in $[Co(CN)_5H]^{3-}$.

<u>SECTION – D</u>

Answer any ONE question

- 23. (i) Derive an expression for rate constant of first order reaction (8 mark)
 - (ii) Derive mathematical expression for zero order reaction (4 mark)
- 24. Deduce an equation for rotational spectra of diatomic molecules and frequency separation

$(5 \times 2 = 10)$

 $(3 \times 6 = 18)$

 $(1 \times 12 = 12)$

CHEMISTRY IN ACTION- (07SB4A)

SECTION – A

Answer ALL questions

- 1. Our bodies function best when oxygen gas has a partial pressure of _____ atm: a) .10 b).15 c) .20 d).25 2. The second most abundant element present in earth's crust is
- b) Iron a) Aluminium c) Calcium d) Silicon
- 3. Laser cooling technique was first applied to gaseous atoms of
- b) Strontium a) Calcium c) Rubidium d) Sodium
- 4. The final process in the production of magnesium from sea is
- b) Electrolysis d) Photolysis a) Hydrolysis c) Catalysis
- 5. The legal limit of blood alcohol content is _____ percent by mass:
 - (a) 0.1 (b) 0.5 (c) 1 (d) 5

SECTION – B

Answer any TWO questions

- 6. State the reason behind the collapse of the spacecraft sent by NASA to planet mars.
- 7. Briefly quote the three layers of earth.
- 8. Write down the redox reaction taking place in a breathalyzer.
- 9. Define nitrogen narcosis. How is it rectified?

SECTION - C

Answer any ONE questions

- 10. Give two examples in everyday life that explains first law of thermodynamics.
- 11. Discuss the theory behind the formation of precipitate inside boilers and pipes, highlighting the equations involved. How to get rid of them?

SECTION – D

Answer any ONE question

- 12. Explain in detail the origin of universe.
- 13. Account on the role of chemical fertilizers in increasing crop quality and yield.

 $(2 \times 2 = 4)$

 $(1 \times 6 = 6)$

 $(1 \times 10 = 10)$

 $(5 \times 1 = 5)$

I Sessional Test

Max. Marks: 25

Time: 1 Hour

Semester IV

III B.ScCHEMISTRY			
Dept. of Chemistry			I Sessional Test
Vivekananda College			VI Semester
Tiruvedakam West			Max. Marks: 50
Date: 03 .01. 2019	AISTDV FOD COMDETITI	νε εν ανινά τιώνς (676	Time: 1 Hours
		VE EAAMINATIONS (0/3	DDUA)
Answer ALL questions		(50 x 1 = 50 ma)	rks)
1. 1 g of a carbonate (M_2CO_3) of	on treatment with excess HCl p	produces 0.01186 mole of CO	D_2 . The molar mass of M_2CO_3
in g mol ⁻¹ is	-		
(a) 1186	(b) 84.3	(c) 118.6	(d) 11.86
2. The molarity of a solution of	otained by mixing 750 mL of 0	0.5 M HCl with 250 mL of 2	M HCl will be
(a) $0.8/5$ M	(b) 1.00 M	(c) 1.75 M	(d) 0.0975 M
3. which type of defect has the	(b) vacancy defect	(c) Frankel defect	(d) metal deficiency defect
4 The intermolecular interaction	on that is dependent on the inve	erse cube of distance betwee	the molecule is
(a) ion-ion interaction	(b) ion-dipole interaction	(c) London force	(d) Hydrogen bond
5. The molecular velocity of an	y gas is	(.)	(2)) 8
(a) inversely proportional to squ	uare root of temperature	(b) inversely proportional to	o absolute temperature
(c) directly proportional to squa	are of temperature	(d) directly proportional to	square root of temperature
6. In vander Waal's equation of	f state of gas law, the constant	'b' is a measure of	
(a) intermolecular repulsions		(b) intermolecular attraction	18
(c) volume occupied by the mo	lecules	(d) intermolecular collision	s per unit volume
/. Based on kinetic theory of ga	(b) Charles' laws can be pro	(a) Avagadro's law	(d) all of these
8 Which of the following is the	e energy of a possible excited s	(c) Avagadi 0 S law	(d) all of these
(a) + 13.6 eV	(b) -6.8 eV	(c) -3.4 eV	(d) + 6.8 eV
9. Which of the following nucle	ear reactions will generate isot	ope?	
(a) neutron particle emission	6	(b) positron emission	
(c) α -particle emission	_	(d) $\hat{\beta}$ -particle emission	
10. The number of d- electrons	retained in Fe ²⁺ are		
(a) 3	(b) 4	(c) 5	(d) 6
11. According to molecular orb	bital theory. Which of the follow (1) U^+	wing will not be a viable mole $()$	lecule? (1) H^{2-}
(a) He_2 12 Which of the following spe	(b) He_2	(c) H_2	(d) H_2
(a) NO	(b) CO	$(c) \mathbf{O}_{\mathbf{c}}$	(d) B ₂
13. Which one of the following	molecules expected to exhibit	t diamagnetic behavior?	$(\mathbf{u}) \mathbf{b}_2$
(a) O_2^+	(b) N_2	(c) O_2	(d) B_2
14. Stability of speicies Li ₂ , Li ₂	2^{-1} and Li_{2}^{+1} increases in the order	r of	· · ·
(a) $Li_2 < Li_2^+ < Li_2^-$	(b) $Li_2^{-} < Li_2^{+} < Li_2$	(c) $\text{Li}_2 < \text{Li}_2^- < \text{Li}_2^+$	(d) $Li_2^- < Li_2 < Li_2^+$
15. Among the following, the n	naximum covalent character sh	nown the compound	
(a) FeCl ₂	(b) SnCl_2	(c) AlCl ₃	(d) $MgCl_2$
16. The hybridization of orbital (a) $cn cn^2 cn^3$	Is of N-atom in NO ₃ , NO ₂ and (h) $an^2 an an^3$	d NH ₄ are respectively	(d) $an^2 an^3 an$
(a) sp, sp , sp 17 Which of the following has	(b) sp ,sp, sp maximum number of lone pai	(c) sp, sp , sp rs associated with Xe?	(d) sp, sp, sp
(a) $Xe\Omega_2$	(b) XeF ₄	(c) XeE	$(d) XeF_{2}$
18. Which of the following hyd	lrogen bonding is the strongest		
(a) O – H…N	(b) $F - H \dots F$	(c) O – H…O	(d) $O - HF$
19. In which of the following n	nolecules/ions, all the bonds ar	e not equal	
(a) SF ₄	(b) SiF_4	(c) XeF ₄	(d) BF_4^-
20. Lattice energy of an ionic c	compound depends upon		
(a) charge on the ion and size o	of the ion	(b) packing ions only	
(c) size of the ion only		(d) charge on the ion only	
(a) when a covalent bond is for	ned transfer of electrons take	s place	
(b) Pure H_2O does not contain a	any ion	s place	
(c) A bond is formed when attra	active force overcome repulsiv	re forces	(d) HF less polar than HBr
22. ΔU is equal to			(2) F F
(a) isochoric work	(b) isobaric work	(c) adiabatic work	(d) isothermal work
23. The heat of combustion of a	carbon and carbon monoxide a	re –393.5 and –283.5 kJmol ⁻	¹ , respectively. The heat of
formation (in kJ) of carbon more	noxide per mole is	() .	
(a) 676.5	(b) -676.5	(c) -110.5	(d) 110.5
24. For a particular reversible r	reaction, at temperature T, ΔH	and ΔS were found to be both	$h + ve$. If T_e is the temperature
at equilibrium, the reaction woth $(a) T > T$	(h) T>T	(c) T is 5 times T	$\mathbf{T} - \mathbf{T}$ (b)
$(a) 1_{e} > 1$	$(U) 1 \ge 1_e$	(c) Iels J tilles I	$(u) I - I_e$

(a) $1_e > 1$ (b) $1 > 1_e$ (c)25. The enthalpy change for a reaction does not depend upon the(a) physical state of reactants and products(b)(c) nature of intermediate reaction step(d) difference in it (b) uses of different reactants for the same product (d) difference in initial or final temperatures of involved substances.

26. Heat required to raise the temperature of 1 mole substance	by 1° is called	
(a) specific heat (b) molar heat capacity	(c) water equivalent	(d) specific gravity
27. If liquid A and B form an ideal solution, the		
(a) enthalpy of mixing is zero	(b) entropy of mixing is zero	
(c) free energy of mixing is zero	(d) free energy as well as entr	opy of mixing is zero
28. A pressure cooker reduces cooking time for food because		
(a) heat is more evenly distributed in the cooking space		
(b) boiling point of water involved in cooking is increased		
(c) the higher pressure inside the cooker crushes the food mate	erial	
(d) cooking involves chemical changes helped by rise the tem	perature	
29. Which of the following concentration factor is affected by	change in temperature?	
(a) molarity (b) molarity 20. Which are of the following equations will exhibit	(c) mole fraction	(d) weight fraction
30. Which one of the following aqueous solutions will exhibit	t nignest boiling point?	(d) 0.015 M alwaaaa
(a) $0.01 \text{ MI} \text{ Na}_2 \text{SO}_4$ (b) $0.01 \text{ MI} \text{ KNO}_3$ 21. Which of the following one Lewis coide?	(c) 0.015 M urea	(d) 0.015 M glucose
(a) DH and PC1 (b) A1C1 and SiC1	(a) DH and SiCl	(d) PC1 and A1C1
(a) F H ₃ allu DCl ₃ (b) AlCl ₃ allu SlCl ₄ 32 Which of the following is solt is most basic in aqueous sol	(C) F Π_3 and SIC1 ₄	(d) BCI3 and AICI3
$(2) \Delta I(CN)$. (b) CH-COOK	(c) EeCl	$(d) \mathbf{Pb}(\mathbf{CH}, \mathbf{COO})$
(a) All $(CN)_3$ (b) CH_3COOR 33 An acid HA ionizes as $HA \rightarrow H^+ \perp A^-$ The nH of 1.0 M s	(C) $\Gamma C C I_3$	$(0) F D(CH_3COO)_2$
(a) 1×10^{-10} (b) 5	$(c) 5 \times 10^{-8}$	(d) 1×10^{-5}
34 Which one of the following species acts as both Bronsted	acid and base?	(u) 1 x 10
(a) $H_2PO_2^{-1}$ (b) HPO_2^{2-1}	(c) HPO^{2-}	(d) all of these
35 An aqueous solution of 1 M NaCl and 1 M HCl is	(c) III O_4	(d) an of these
(a) not a buffer but $pH<7$ (b) not a buffer but $pH>7$	(c) a buffer but $pH < 7$	(d) a buffer but $pH>7$
36 Galvanization is applying a coating of	(c) a buller but prix/	(a) a buller but pil> /
(a) Cr (b) Cu	(c) Zn	(d) Pb
37. The metal cannot be obtained by the electrolysis of an agu	eous solution of its salt is	(4)10
a) Ag (b) Ca	(c) Cu	(d) Cr
38. The oxidation state of chromium in the final product form	ed by reaction between KI and	acidified potassium
dichromate solution is		
(a) $+3$ (b) $+2$	(c) + 6	(d) +4
39. The highest electrical conductivity from the following aqu	eous solution is of	
(a) 0.1 M difluoroacetic acid	(b) 0.1 M fluoroacetic acid	
(c) 0.1 M chlooroacetic acid	(d) 0.1 M acetic acid	
40. Several blocks of magnesium are fixed to the bottom of a	ship to	
(a) keep away the sharks	(b) make the ship lighter	
(c) prevent action of water and salt	(d) prevent puncturing by und	ersea rocks
41. For the linear plot of log (x/m) versus log p in a Freundlic	h adsorption isotherm, which o	f the following statements
is correct? (k and n are constants)	_	-
(a) 1/n appears as the intercept	(b) only 1/n appears as the slo	pe
(c) $\log(1/n)$ appears as the intercept	(d) both k and $1/n$ appear in the	ne slope term
42. A reaction was found to be second order with respect to the	e concentration of carbon mon	oxide. If concentration of
carbon monoxide is doubled, with everything else kept the sar	ne, the rate of reaction will	
a) remain unchanged (b) triple	(c) increase by factor of 4	(d)double
43. In Langmuir's model adsorption of a gas in a solid surface	2	
(a) the rate of dissociation of adsorbed molecules from the sur	face does not depend on the su	rface covered
(b) the adsorption at a single site on the surface may involve n	nultiple molecules at the same	time
(c) the mass of gas striking a given area of surface is proportio	onal to the pressure of gas	
(d) the mass of gas striking a given area of surface independer	nt of the pressure of gas	
44. A reaction involving two different reactants can never be		
(a) bimolecular reaction	(b) second order reaction	
(c) first order reaction	(d) unimolecular reaction	
45. H_2 gas adsorbed on the metal like tungsten. This follows	(a) more	(d) firest
(a) third (b) second (c) Which of the following stores has the highest invitation	(c) zero	(d) first
40. Which of the following atoms has the highest following atoms has the highest following atoms $(b) K$	(a) So	(d) Ph
(d) Na (D) \mathbb{R}	(C) SC	(\mathbf{U}) KD
47. The correct order of electron gain enthalpy with negative s	sign of F, CI, BI and I, having a	uonne number 9, 17, 55 and
(a) $I \ge Br \le C \ge E$ (b) $E \le C \ge Br \le I$	(c) $C > Br > I$	(d) $\mathbf{Br} \subset \mathbf{I} \setminus \mathbf{F}$
48 Which one of the ions has the highest value of ionic radius		(\mathbf{u}) DI \rightarrow CI \rightarrow I \rightarrow I
(a) L_{i}^{+} (b) R_{i}^{3+}	$(c) \Omega^{2-}$	(d) \mathbf{F}^{-}
49 According to the periodic law of elements the variation in	\mathbf{O}_2	ed their
(a) atomic masses (b) nuclear masses	(c) atomic numbers	(d) n/n ratio
50 Which among the following factors is the most important	in making fluorine the stronges	t oxidizing agent?
(a) electron affinity	(b) ionization onthelpy	a chiaizing agont.
(a) erection arming	$(D) O Zalion \in [D] A \rightarrow [D] A A \rightarrow [D] A \rightarrow [D] A \rightarrow [D] A \rightarrow [D] A A A A A A A A A $	
(c) hydration enthalpy	(d) bond dissociation energy	

Answer ALL questions

ANALYTICAL METHODS IN CHEMISTRY (07SB6F)

SECTION – A

$(5 \times 1 = 5)$

- 2. In chromatography, which of the following can the mobile phase are made of?

a) Solid or liquid b) Liquid or gas c) Gas only d) Liquid only

- 3. The relative adsorption of each components of the mixture is expressed in terms of its
- a) Acceleration factor b) Retardation factor c) Both a and b d) None of these
- 4. Science of chemical characterization isa) Analytical chemistry b) Physical chemistry c) Organic chemistry d) Inorganic chemistry
- 5. Identification of an element is
 - a) Testing b) Quantitative analysis c) Qualitative analysis d) Physical test

SECTION – B

Answer any TWO questions

- 6. What is meant by analytical chemistry?
- 7. Define the terms: elution and eluent.
- 8. What is the significance of R_f value?
- 9. What is development?

SECTION – C

Answer any ONE question

- 10. Give comparisons between adsorption and partition chromatography.
- 11. Explain the importance of analytical methods in Qualitative and Quantitative analysis

SECTION – D

Answer any ONE question

- 12. Discuss the advantages and limitations of instrumental methods.
- 13. Explain briefly about column chromatography could be used for the separation of a mixture of two dyes.

 $(1 \times 6 = 6)$

 $(1 \times 10 = 10)$

 $(2 \times 2 = 4)$