

Padasalai⁹S Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- Padasalai's NEWS Group https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA
- Padasalai's Channel Group https://t.me/padasalaichannel
- Lesson Plan Group https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw
- 12th Standard Group https://t.me/Padasalai 12th
- 11th Standard Group https://t.me/Padasalai_11th
- 10th Standard Group https://t.me/Padasalai_10th
- 9th Standard Group https://t.me/Padasalai 9th
- 6th to 8th Standard Group https://t.me/Padasalai_6to8
- 1st to 5th Standard Group https://t.me/Padasalai_1to5
- TET Group https://t.me/Padasalai_TET
- PGTRB Group https://t.me/Padasalai_PGTRB
- TNPSC Group https://t.me/Padasalai_TNPSC

UNIT I- METALLURGY

- 1. Choose the correct answer:
- 1. Bauxite has the composition
 - a) Al2O3
- b) Al2O3.nH2O
- c) Fe2O3.2H2O
- d)None of these
- 2. Roasting of sulphide ore gives the gas (A).(A) is a colourless gas. Aqueous solution of (A) is acidic.
- The gas (A) is
 - a) CO2
- b) SO3
- c)SO2

d) H2S

3. Which one of the following reaction represents calcinations?

a)
$$2Zn + O_2 \longrightarrow 2ZnO 2$$

b)
$$2ZnS + 3O_2$$
 —

 \rightarrow ZnO + 2SO2

c)MgCO₃
$$\longrightarrow$$
 MgO + CO 2

- d)Both (a) and
- 4. The metal oxide which cannot be reduced to metal by carbon is
 - a) PbO
- b) Al₂O3
- c) ZnO

- d) FeO
- 5. Which of the metal is extracted by Hall-Heroult process?
 - a) Al
- b) Ni
- c) Cu

- d) Zn
- 6. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true?
 - a) ΔGf 0 of sulphide is greater than those for CS2 and H₂S.
 - b) Δ Gr⁰ is negative for roasting of sulphide ore to oxide
 - c) Roasting of the sulphide to its oxide is thermodynamically feasible.
 - d) Carbon and hydrogen are suitable reducing agents for metal sulphides.
- 7. Match items in column I with the items of column II and assign the correct code.

क्षिष्ठ	Column-I		Column-II
A	Cyanide process	(i)	Ultrapure Ge
В	Froth floatation proces	(ii)	Dressing of ZnS
С	Electrolytic reduction	(iii)	Extraction of Al
D	Zone refining	(iv)	Extraction of Au
38/8	006083818	(v)	Purification of Ni

THAN	A	В	C	В			
(a)	(i)	(ii)	(iii)	(iv)			
(b)	(iii)	(iv)	(v)	(i)			
(c)	(iv)	(ii)	(iii)	(i)			
(d)	(ii)	(iii)	(i)	(v)			

8. Wolframite ore is

separated from tinstone by the process of

- a) Smelting
- b) Calcination
 - c) Roasting
- d) Electromagnetic separation

9.Which one of the foll	owing is not feasibl	e	
a) $Zn(s) + Cu^{2+}(aq)$	—— Cu(s) +	$Zn^{2+}(aq)$	
b) $Cu(s) + Zn^{2+}(aq)$	Zn(s) + c	$Cu^{2+}(aq)$	
c) $Cu(s) + 2Ag^{+}(aq)$	\rightarrow Ag(s) +	$Cu^{2+}(aq)$	
d) Fe(s) + Cu ²⁺ (aq) 10.Electrochemical pro			
a) Iron	b) Lead	c) Sodium	d) silver
11 Flux is a substance v	which is used to cor	nvert	
a) Mineral into s	silicate b) Infus	sible impurities to solu	ıble impurities
c) Soluble impur	rities to infusible im	npurities d) All of	these
12. Which one of the fo method?	llowing ores is best	concentrated by froth	n – floatation
a) Magnetite	b) Hematite	c) Galena	d) Cassiterite
13In the extraction of a	luminium from alu	mina by electrolysis,	cryolite is added to
a) Lower the me alumina	lting point of alum	ina b) Remov	ve impurities from
c) Decrease the	electrical conductiv	ity d) Increase the r	rate of reduction
14. Zinc is obtained fro	m ZnO by		
a) Carbon reduc	tion	b) Reduct	tion using silver
c) Electrochemic		d) Acid le	eaching
15. Cupellation is a pro	cess used for the re	efining of	
a) Silver	b) Lead	c) Coppe	r d) iron
16. Extraction of gold a recovered by	nd silver involves l	eaching with cyanide	ion. silver is later
a) Distillation b) Zone refining c) Displacement with z	inc d) liquation
17. Considering Ellingl reduce alumina?	nam diagram, which	h of the following me	tals can be used to
a) Fe	b) Cu	c) Mg	d) Zn
18. The following set of	f reactions are used	in refining Zirconium	ı
Zr (impure) + 2I ₂ 52	^{3k} → ZrI ₄		
ZrI_4 ^{1800k}	(pure) $+2I_2$ This me	thod is known as	
a) Liquation b)	van Arkel process o	c) Zone refining d)	Mond's process
19. Which of the follow	((())) •	, , , , , , , , , , , , , , , , , , ,	• ((1) #9
a) Leaching	0) Froth floatation d)	00300

- 20. The incorrect statement among the following is
 - a) Nickel is refined by Mond's process
 - b) Titanium is refined by Van Arkel's process
 - c) Zinc blende is concentrated by froth floatation
- d) In the metallurgy of gold, the metal is leached with dilute sodium chloride solution
- 21. In the electrolytic refining of copper, which one of the following is used as anode?
 - a) Pure copper

b) Impure copper

c) Carbon rod

- d) Platinum electrode
- 22. Which of the following plot gives Ellingham diagram
 - a) ΔS Vs T

b) $\Delta G^0 Vs T$

- c) $\Delta G^0 \text{ Vs } 1/T 0$
- d) ΔG^0 Vs T²
- 23. In the Ellingham diagram, for the formation of carbon monoxide

c. $\left(\frac{\Delta G^0}{\Delta T}\right)$ is negative

d) initially $\left[\begin{array}{c} \underline{\Delta T} \\ \underline{\Delta G} \end{array}\right]$ is positive after 700° C $\left[\begin{array}{c} \underline{\Delta G} \\ \underline{\Delta T} \end{array}\right]$ is negative

- 24. Which of the following reduction is not thermodynamically feasible?
 - a) $Cr_2 O_3 + 2A1 \longrightarrow Al_2 O_3 + 2Cr$ b) $Al_2 O_3 + 2Cr \longrightarrow Cr_2 O_3 + 2A1$
 - c) $3\text{TiO}_2 + 4\text{Al} \longrightarrow 2 \text{Al}_2 \text{O}_3 + 3\text{Ti}$
- d) none of these
- 25. Which of the following is not true with respect to Ellingham diagram?
- a) Free energy changes follow a straight line. Deviation occurs when there is a phase change.
- b) The graph for the formation of CO2 is a straight line almost parallel to free energy axis.
- c) Negative slope of CO shows that it becomes more stable with increase in temperature.
- d) Positive slope of metal oxides shows that their stabilities decrease with increase in temperature.

UNIT 2-p-Block elements-I

Choose the correct answer:

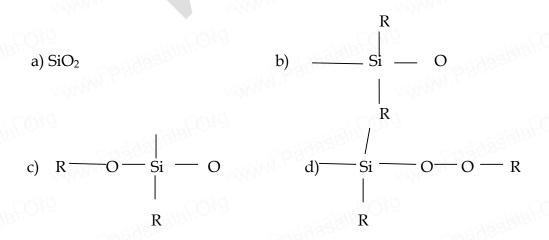
1.An aqueous solution	n of borax is				
~ - naa66) acidic c) ba	sic d)	amphoteri	CMP.P302	
2. Boric acid is an acid	because its mole	ecule (NEET	-		
	laceable H+ ion	- 2/	. 0x600	s up a proton	
c) combines wi water ,releasing proto	th proton to form n.	n water mol	ecule (d) accepts OH- fro	om
3. Which among the fo	ollowing is not a	borane?			
a) $B_2 H_6$ b	$(c)B_3 H_6 c)B_4$	H_{10} d)	none of the	se	
4. Which of the follow	ing metals has th	ne largest ab	oundance in	the earth's crust?	
a) Aluminium	b) calcium	c) Magne	esium	d) sodium	
5. In diborane, the nu	mber of electrons	that accour	nts for bana	na bonds is	
a) six	b) two	c) four	0.00	d) three	
6. The element that do	oes not show cate	nation amo	ng the follo	wing p-block eler	nents
a) Carbon	b) silicon	c) Lead		d) germanium	
7. Carbon atoms in ful	llerene with form	nula C60 hav	ve)		
a) sp3 hybridis	ed	b)	sp hybridis	sed	
c) sp2 hybridise hybridised	ed	d)	partially sp	o2 and partially sp	93
8. Oxidation state of c	arbon in its hydr	ides			
a) +4	b) -4	c) +3		d) +2	

9. The basic structural unit of silicates is (NEET)

a)
$$(SiO_3)^{2-}$$

d) (SiO₄)4-

10. The repeating unit in silicone is



D 3

3

3

11. Which	of these is not a	monomer	for a high mol	ecular m	ass silico	one polym	er?
a) N	Me3SiCl	b) PhSiCl	3 c) N	1eSiCl3		d) Me2Si0	C12
12. Which	of the following	g is not sp2	hybridised?				
a) (Graphite	b) graphe	ene c) F	ullerene		d) dry ice	
13. The ge	ometry at which	n carbon atc	om in diamono	l are bon	ded to e	ach other	is
a) 7	Tetrahedral	b) hexago	onal c) C	Octahedra	al	d) none of	these
14. Which	of the following	g statements	s is not correct	?			
a) I	Beryl is a cyclic s	silicate b) I	Mg2SiO4 is an	orthosil	icate		
	SiO44-is the bas nosilicate	ic structura	l unit of silicat	es	d) Felo	dspar is no	ot
15. AlF3 is (NEET)	s soluble in HF c	only in the p	oresence of KF	. It is du	e to the f	ormation (of
a) I	⟨ 3(AlF 3H3)	b) K ₃ (All	F ₃)	c) AlH	[3 d) K(.	AlF ₃ H)	
16. Match code.	items in column	n - I with the	e items of colu	mn – II a	and assig	gn the corr	ect
Co	olumn-I	Colu	ımn-II				
A	Borazole	1	B(OH)3		A	В	c c
В	Boric acid	2	B3N3H6	(a)	2	1	4
C	Quartz	3	Na2[B4O5 (OH)4]	(b)	1	2	4
D	D.	W	8H2O		MAN.	2	WWW.
D	Borax	4	SiO2	(c)	1	2	4
				(d)	None of these		
17. Duralu	ımin is an alloy	of					
a) Cu,N	Mn	b) Cu,Al,N	Mg c) A	l,Mn		d) Al,Cu,N	Mn,Mg
18.Thermo	odynamically th	e most stab	le form of carb	on is			
a) Diar	mond	b) graphit	e c) I	Fullerene	2	d) none of	these
19. The co	mpound that is	used in nuc	elear reactors a	s protec	tive shie	lds and co	ntrol
rods is							
	al borides b) me ability of +1 oxid		c) Metal ca increases in th		,	al carbide	
a) Al <	< Ga < In < Tl		b) 7	[] < In <	Ga < A	1	
c) I	n < T1 < Ga < /	41	d) (Ga< In <	A1 < T	1	

Unit -3 P- BLOCK ELEMENTS-II

Choose the best answer:

1. In which of the follo	wing, NH3 is n	ot used?	
a) Nessler's reagent	Balan		
b) Reagent for the a		oup basic radical	
c) Reagent for the a	nalysis of III gr	oup basic radical	
d) Tollen's reagent	algia hous		
2. Which is true regard	0		
a) least electronega		, Whin,	
b) has low ionisation c) d- orbitals availa	· L IN MUCA	n oxygen	
d) ability to form p		rith itself	
3. An element belongs			riodic table, its
electronic configura	· -		0.00
a) $1s^2 2s^2 2p^4$	b) 1s ² 2	•	
c) $1s^2 2s^2 2p^6 3s^2 3p^2$	d) 1s ² 2	$2s^2 2p^6 3s^2 3p^3$	
4. Solid (A) reacts with which spontaneous respectively	0 1	is NaOH liberating a fo iving smoky rings. A a	0 0 ,
a) P ₄ (red) and PH ₃ c) S ₈ and H ₂ S		white) and PH ₃ white) and H ₂ S	
5. In the brown ring te		09/9	
a) a mixture of No ar		oso ferrous sulphate	
c) Ferrous nitrate	Adha.	d) Ferric nitrate	
6. On hydrolysis, PCl ₃	gives		
a) H ₃ PO ₃	b) PH ₃	c) H ₃ PO ₄	d) POCl ₃
7. P ₄ O ₆ reacts with cold	water to give		
a) H ₃ PO ₃	b) H ₄ P ₂ O ₇	c) HPO ₃	d) H ₃ PO ₄
8.The basicity of pyroph	osphorous acid ($(H_4P_2O_5)$ is	
a) 4	b) 2	c) 3	d) 5
9. The molarity of given	1 TILVE		
a) 6N	b) 4N	c) 2N	d) none of these
10. Assertion : bond diss Reason: chlorine has mo		- A A A A A A A A A A A A A A A A A A A	ii chiorine gas
a) Both assertion and rea	_		olanation of
assertion.		2/3/3/501/9 ·	- 3/3/3/501A
b) Both assertion and rea	ason are true but	reason is not the correct	explanation of
assertion.	oogon is foloo		
c) Assertion is true but rd) Both assertion and rea			
-,			

11. Among the following, which is the s	0 0	nt?
a) Cl ₂ b) F ₂ c) Br ₂	, \\\\\\\	M
12. The correct order of the thermal stab a) HI > HBr > HCl > HF	b) HF > HCl > HBr >	
c) HCl > HF > HBr > HI	d) HI > HCl > HF > H	
() 1161 111 1161 111		WW.P.guc.
13. Which one of the following compour	nds is not formed?	
a) XeOF ₄ b) XeO ₃	c) XeF ₂	d) NeF ₂
14. Most easily liquefiable gas is		
a) Ar b) Ne	// / / / / / / / / / / / / / / / / / /	l) Kr
15. XeF6 on complete hydrolysis produc		1) V-O
a) XeOF ₄ b) XeO ₂ F ₂ 16. On oxidation with iodine, sulphite io	c) XeO ₃	d) XeO ₂
a) S ₄ O ₆ ²⁻ b) S ₂ O ₆ ²⁻	c) SO ₄ ²⁻	d) SO ₃ ²⁻
17. Which of the following is strongest a		u) 503
a) HI b) HF	c) HBr	d) HCl
58/24.	1000000	8881011
18. Which one of the following order enthalpy of halogen molecules? (I		na dissociation
a) $Br_2 > I_2 > F_2 > Cl_2$	b) $F_2 > Cl_2 > Br_2 > I_2$	
c) $I_2 > Br_2 > Cl_2 > F_2$	d) $Cl_2 > Br_2 > F_2 > I_2$	
19. Among the following the correct	order of acidity is (N	EET)
a) HClO ₂ < HClO < HClO ₃ < HClO ₄		1O ₂ < HClO < HClO ₃
c) HClO ₃ < HClO ₄ < HClO ₂ < HClO	d) HClO < HC	$1O_2 < HC1O_3 < HC1O_4$
20. When copper is heated with conc	HNO₃ it produces	
a) $Cu(NO_3)_2$, NO and NO_2	b) Cu(NO ₃) ₂ and	
c) Cu(NO ₃) ₂ and NO ₂	d) $Cu(NO_3)_2$ an	d NO
Unit-4- TRANSITION AND INNE	ER TRANSITION EI	LEMENTS
Choose the best answer:		
1. Sc(Z=21) is a transition element but 2	Zinc (z=30) is not becau	150
a) both Sc3+ and Zn2+ ions are color		-
b) in case of Sc, 3d orbital are partial	ly filled but in Zn these	e are completely filled
c) last electron as assumed to be add	ed to 4s level in case of	fzinc
d) both Sc and Zn do not exhibit var	iable oxidation states	
2. Which of the following d block elem	ent has half filled pen	ultimate d sub shell as
well as half filled valence sub shell?	1983/3/3/-01-	
a) Cr b) Pd	VIVI 4.7) none of these
3. Among the transition metals of 3d ser	ries, the one that has hi	ghest negative (M ²⁺ /
M) standard electrode potential is		

a) Ti	b) Cu	c) Mn	d) Z	in a second
4. Which one of present in V	the following ions l ³⁺ ?	nas the same num	ber of unpai	red electrons as
a) Ti ³⁺	b) Fe ³⁺	c) Ni²	2+	d) Cr ³⁺
5. The magnetic	moment of Mn2+ io	on is		
a) 5.92BM	b) 2.80BM	c) 8.95BM	d) 3.	.90BM
6. Which of the	following compoun	ds is colourless?		
a) Fe ³⁺	b) Ti ⁴⁺	c) Co ²⁺	d) N	Ji^{2+}
7. the catalytic b mainly due t	ehaviour of transiti o	on metals and the	ir compound	ds is ascribed
a) their magr	netic behaviour		b) their uni	filled d orbitals
c) their abilit	y to adopt variable	oxidation states	d) their ch	emical reactivity
8. The correct or	der of increasing ox	kidizing power in	the series	
a) $VO_2^+ < Cr_2^+$	$_{2}O_{7}^{2-} < MnO_{4}^{-}$	b) Cr ₂ O ₇ 2- < \	$VO_2^+ < MnO_2^+$	4
c) $Cr_2O_7^{2-} < N$	MnO_4 $\sim VO_2$ $+$	d) M	nO ₄ -Cr ₂ O ₇ ² -	<vo<sub>2+</vo<sub>
9. The alloy of co	opper that contain 2	Zinc is		
a) Monel me	tal b) Bronz	ze c) bel	l metal	d) brass
10. Which of the	following does not	give oxygen on h	neating?	
a) K2Cr2O7	b) (NH4)2Cr2O7 c) K0	C1O3	d) Zn(ClO3)2
11. In acid medi	um, potassium perr	manganate oxidiz	es oxalic acid	l to
a) oxalate	b) Carbon diox	ide c) ac	etate d) a	cetic acid
12. Which of the	following statemer	nts is not true?		
a) on passing observed.	g H2S, through acid	ified K2Cr2O7 so	lution, a mill	ky colour is
b) Na2Cr2O7	is preferred over k	C2Cr2O7 in volum	netric analysi	is
c) K2Cr2O7 s	solution in acidic m	edium is orange i	n colour	
d) K2Cr2O7	solution becomes ye	ellow on increasir	ng the PH be	yond 7
13. Permangana	te ion changes to	in acidic r	nedium	
a) MnO4 ²⁻	b) Mn ²⁺	c) M	n ³⁺	d) MnO2
and also for	ms a yellow precip	pitate . The gas (B) turns pot	a suffocating gas (B) tassium dichromate C). A,B and C are
a) Na_2SO_3 , S	O ₂ , Cr ₂ (SO ₄) 3	b) Na	₂ S ₂ O ₃ , SO ₂ ,	Cr ₂ (SO ₄) 3
c) Na ₂ S , SO	2, Cr ₂ (SO ₄) 3	d) Na	12 SO ₄ , SO ₂ C	$Cr_2(SO_4)$ 3
15. MnO4- react	with Br-in alkaline	PH to give		

	a) BrO ₃ -, MnO 2,	b) Br ₂ , MnO ₄	1 ²⁻ c) Br ₂ , MnO2	d) BrO- , MnO4 ²⁻
16.	How many moles of I		vhen 1 mole of potassiu	m dichromate react
	a) 1	b) 2	c) 3	d) 4
17.	The number of moles oxalate(FeC2O4) is	of acidified KM	nO4 required to oxidize	1 mole of ferrous
	a) 5	b) 3	c) 0.6	d) 1.5
18.	(reacts with NF	ids treated with HCl , it I3 to give an explosive c	
	a) MnO ₂ , Cl ₂ , NCl ₃		b) MnO, Cl ₂ , NH ₄ Cl	
	c) Mn ₃ O ₄ , Cl ₂ , NCl ₃		d) MnO ₃ , Cl ₂ , NCl ₃	
19.	Which one of the follo	wing statement	s related to lanthanons i	s incorrect?
	a) Europium shows +2	2 oxidation state	e.	
	b) The basicity decrease	ses as the ionic	radius decreases from Pr	r to Lu.
	c) All the lanthanons a	are much more	reactive than aluminium	l. 188
	d) Ce4+ solutions are	widely used as	oxidising agents in volu	metric analysis.
20	TATILITY of the Callerin	- la mula a mai di ina	as is diamagnatis?	
20.	Which of the followin			1) C - 2+
01	a) Eu ²⁺	b) Yb ²⁺	c) Ce ²⁺	d) Sm ²⁺
21.			es is most common amo	
	a) 4	b) 2	c) 5	d) 3
22.	Reason: Ce4+ has the a) Both assertion and assertion.	tendency of atta reason are true	ng agent in volumetric a nining +3 oxidation state and reason is the correct but reason is not the cor	explanation of
	c) Assertion is true bu d) Both assertion and			
23.	The most common ox	idation state of	actinoids is	
	a) +2	b) +3	c) +4	d) +6
24.	The actinoid elements	which show th	e highest oxidation state	e of +7 are
	a) Np, Pu ,Am	b) U, Fm, Th	c) U, Th, Md	d) Es, No, Lr
25.	Which one of the follo	wing is not cor	rect?	
	a) La(OH)2 is less basis	ic than Lu(OH)3	3 pgdgSai	
	b) In lanthanoid series	s ionic radius of	Ln3+ ions decreases	
	c) La is actually an ele	ment of transiti	on metal series rather th	an lanthanide series

d) Atomic radii of Zr and Hf are same because of lanthanide contraction

UNIT 5-COORDINATIONCHEMISTRY

Choose the correct answer:

CI	loose the correct arisw	51.			
1.	The sum of primary v	alance and sec	condary valanc	ce of the metal M is	n the
	M (en) ₂ (Ox) Cl is				
	a) 3	b) 6	c) -3	<u>d) 9</u>	
2.	An excess of silver ni pentaaquachloridoch precipitated would b	romium(III)cl			AgCl
	a)0.02		_c) 0.01	d) 0.2	
3.	A complex has a mogives white precipi obtained when it is to the metal is six, which	tate with Bari reated with silv	ium chloride ver nitrate solu	solution and no tion. If the second	precipitate is ary valence of
	a) [M (H ₂ O) ₄ Cl] SO	₄ .2H ₂ O	b) [м	(H ₂ O) ₆] SO ₄	
	c) [M (H ₂ O) ₅ Cl] SO ₄	.H ₂ O	d) [M	(H ₂ O) ₃ Cl] SO ₄ .3H	H_2O
4.	Oxidation state of Iro	n and the char	ge on the ligan	d NO in [Fe (H ₂ O)5 NO]SO4 are
	a) +2 and 0 respecti	vely	b) +3 and	0 respectively	
	c) +3 and -1 respective	vely	d) +1 and	+1 respectively	
5.	As per IUPAC guidel		-	_ , , , , ,	Cl]Cl is
	b) chloridobis(ethan	ne-1,2-diamine)nitro K -Ocob	oaltate(III) chloride	a a late to the
	c) chloridobis(ethand) chloridobis(ethand)	*	,	obalt(II) chloride alt(III) chloride	
6.	IUPAC name of the c	omplex K3 [Al	(C_2O_4)] is		
	a) potassiumtrioxal	atoaluminium	(III)		
	b) potassiumtrioxal	atoaluminate(II)		
	c) potassiumtrisoxa	ılatoaluminate	(III)		

d) potassiumtrioxalatoaluminate(III)

7. A magnetic moment of 1.73BN (NEET)	I will be shown by one among the following
a) TiCl ₄ b) [CoCl ₆] ⁴⁻ 8. Crystal field stabilization ener	c) [Cu (NH $_3$) $_4$] $^{2+}$ d) [Ni (CN) $_4$] $^{2-}$ gy for high spin d 5 octahedral complex is
a) $-0.6\Delta_0$	b) 0
c) 2(P -Δ0)	d) $2(P + \Delta 0)$
9. In which of the following coor	dination entities the magnitude of $\Delta 0$ will be
maximum?	1000m., 100
a) [Co (CN) ₆] ³⁻	b) [Co (C ₂ O ₄) ₃] ³⁻
c) [Co (H ₂ O) ₆] ³⁺	d) [Co (NH ₃) ₆] ³⁺
10. Which one of the following w	vill give a pair of enantiomorphs?
a) [Cr (NH ₃)][Co (CN) ₆]	b) [Co (en) ₂ cl ₂ ,] Cl
c) [Pt (NH ₃) ₄][PtCl ₄]	d) [Co (NH ₃) ₄ Cl ₂] NO ₂
11. Which type of isomerism is	s exhibited by [Pt (NH ₃) Cl ₂]?
a) Coordination isomerism	b) Linkage isomerism
c) Optical isomerism	d) Geometrical isomerism
12. How many geometrical isome	ers are possible for [Pt(Py)(NH ₃)(Br)(Cl)]?
a) 3 b) 4	c) 0 d) 15
13. Which one of the following p	airs represents linkage isomers?
a) [Cu (NH ₃) ₄][PtCl ₄] a	and [Pt (NH ₃) ₄][CuCl ₄]
b) [Co(NH ₃) ₅ (NO ₃)]SO	4 and [Co(NH3)5 (ONO)]
c) $[Co(NH_3)_4(NCS)_2]C$	I and $[Co(NH_3)_4(SCN)_2]Cl$
d) both (b) and (c) 14. Which kind of isomerism is p	ossible for a complex [Co(NH ₃) ₄ Br ₂] Cl?
a) geometrical and ionization	b) geometrical and optical
c) optical and ionization	d) geometrical only
15. Which one of the following co	omplexes is not expected to exhibit isomerism?
a)[Ni (NH ₃) ₄ (H ₂ O)] ²⁺	b)[Pt (NH ₃) Cl ₂]
c) [Co (NH ₃) ₅ SO ₄] Cl	d)[Fe(en) ₃] ³⁺

16.	A complex in which the oxidation	on number of the metal is zero is	
	a) K ₄ [Fe (CN) ₆]	b) [Fe (CN) ₃ (NH ₃) ₃]	
17.	c) [Fe (CO) ₅] Formula of tris(ethane-1,2-diami	d) both (b) and (c) ine)iron(II)phosphate	
18.	a) [Fe (CH ₃ -CH(NH ₂) ₂)](PO ₄) ₃ c) [Fe(H ₂ N-CH ₂ -CH ₂ -NH ₂) ₃](PO ₄ Which of the following is param		,
	a) $[Zn (NH_3)_4]^{2+}$ c) $[Ni (H_2O)_6]^{2+}$ Fac-mer isomerism is shown by a) $[Co (en)_3]^{3+}$ c) $[Co (NH_3)_3(Cl)_3]$ Choose the correct statement.	 b) [Co (NH₃)₆]³⁺ d) [Ni (CN)₄]²⁻ b) [Co(NH₃)₄ (Cl)₂]⁺ d) [Co (NH₃)₅ Cl] SO₄ 	
	a)Square planar complexes are n	more stable than octahedral complex	kes
pla	b)The spin only magnetic mom	nent of [Cu(Cl) ₄] is 1.732 BM and	it has square
88	c)Crystal field splitting energy (A	(Δ_0) of [FeF ₆] ⁴⁻ is higher than the (Δ_0) of	of [Fe (CN) ₆] ⁴
	d)crystal field stabilization energy stabilization of [Ti(H ₂ O) ₆] ²⁺ 6. SOLID S		e crystal field
Ch	oose the best answer:		
1. (Graphite and diamond are		
	a) Covalent and molecular crystal	ls b) ionic and covalent crystals	
	c) both covalent crystals	d) both molecular crystals	
	3 3	zes in fcc type crystal structure with cupying entre of the cube. the corre	
	a) AB b) AB3	c) A3B	d) A8B6
3. 1	The ratio of close packed atoms to	tetrahedral hole in cubic packing is	
	a) 1:1 b) 1:2	c) 2:1	d) 1:4
4. 5	Solid CO2 is an example of		
	a) Covalent solid b) metallic solid	l c) molecular solid d) ionic sol	id
5. <i>A</i>	Assertion : monoclinic sulphur is a	nn example of monoclinic crystal sys	stem
Rea	ason: for a monoclinic system, a≠b	$\rho \neq c$ and $\alpha = \gamma = 90^{\circ} \beta \neq 90^{\circ}$	

a) Both assert	ion and reason are	e true and reason is	the correct explana	tion of
b) Both asserti assertion.	on and reason are	true but reason is no	t the correct explana	ition of
c) Assertion is	true but reason is fa	alse.		
· VOWMAN.	on and reason are f			
6. In calcium fluorion and F- Ion	A 'A ON U	rite structure the coo	ordination number o	f Ca2+
a) 4 and 2	b) 6 and 6	c) 8 and 4	d) 4 and 8	
	unit cells in 8 gm of a	an element X (atomic adro number)	mass 40) which crys	tallizes
a) 6.023 X 10 ²³	b)	6.023 X 10 ²²	PWW.bagoson	
c) 60.23 X 10 ²³	d) (6 023 ×10 ²³		
		8. × 40		
8. The number of	carbon atoms per u	nit cell of diamond is	WANNESS CONTRACTOR	
a) 8	b) 6	c) 1	d) 4	
		tice and $(1/3)$ of tetr formed by M and N.	ahedral voids are oc	cupied
a) MN	b) M ₃ N	c) MN ₃	d) M ₃ N ₂	
10. The compositi		vurtzite is Fe _{0.93} O _{1.0}	what % of Iron pre	sent in
a) 16.05%	b) 15.05%	c) 18.05%	d) 17.05%	
11. The ionic radii number of each		098×10 ⁻¹⁰ .m and 1.81	\times 10 ⁻¹⁰ .m the coord	ination
a) 8	b) 2	c) 6	d) 4	
12. CsCl has bcc distance is	arrangement, its u	unit cell edge length	is 400pm, its inter	atomic
a) 400pm	b) 800pm	c) √3 100×pm	d) $(3\sqrt{2}) \times 40$	00 pm
13. A solid comporadius of the a		tructure. if the radius	of the cation is 100p	m, the
a) (100//041	b) (0. 732)	(100) c) 100× 04	d) (0.414/	100)
	ace in bcc lattice uni			
a) 48%	b) 23%	c) 32%	d) 26%	
15. The radius of a	1088810	it crystallizes in a fac	19833100	ice, the
a) 488.5pm	_		d) 484.5pn	n-0.0

a) $\frac{\pi}{4\sqrt{2}}$

		· CALMENN · CALMENN · CALMENN · CALMENN ·
]	18.	If 'a' stands for the edge length of the cubic system; sc, bcc, and fcc. Then the ratio of radii of spheres in these systems will be respectively.
		a) $\frac{1}{2} a: \frac{\sqrt{3}}{2} a: \frac{\sqrt{2}}{2} a$ b) $(\sqrt{1a}: \sqrt{3a}: \sqrt{2a})$
		c) $\left(\frac{1}{2}a:\frac{\sqrt{3}}{4}a:\frac{1}{2\sqrt{2}}a\right)$ d) $\left(\frac{1}{2}a:\sqrt{3}a:\frac{1}{\sqrt{2}}a\right)$
1	19.	if 'a' is the length of the side of the cube, the distance between the body centered atom and one corner atom in the cube will be
		a) $(\frac{2}{\sqrt{3}})a$ b) $(\frac{4}{\sqrt{3}})a$ c) $(\frac{\sqrt{3}}{4})a$ d) $(\frac{\sqrt{3}}{2})a$
2	20.	Potassium has a bcc structure with nearest neighbor distance 4.52 A0 . its atomic weight is 39. its density will be
		a) 915 kg m ⁻³ b) 2142 kg m ⁻³ c) 452 kg m ⁻³ d) 390 kg m ⁻³
7	21.	Schottky defect in a crystal is observed when
		a) unequal number of anions and anions are missing from the lattice
		b) equal number of anions and anions are missing from the lattice
		c) an ion leaves its normal site and occupies an interstitial site
		d) no ion is missing from its lattice.
3	22.	The cation leaves its normal position in the crystal and moves to some interstitial position, the defect in the crystal is known as
		a) Schottky defect b) Fcenter c) Frenkel defect d)non-stoichiometric defect
2	23.	Assertion: due to Frenkel defect, density of the crystalline solid decreases.
		Reason: in Frenkel defect cation and anion leaves the crystal.
		a) Both assertion and reason are true and reason is the correct explanation of assertion.
		b) Both assertion and reason are true but reason is not the correct explanation of assertion.
		c) Assertion is true but reason is false.
		d) Both assertion and reason are false

16. The fraction of total volume occupied by the atoms in a simple cubic is

b) $\frac{\pi}{6}$

b) reflection of light from Cl- ion on the surface

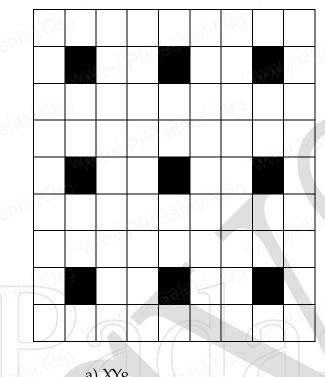
17. The yellow colour in NaCl crystal is due to

a) excitation of electrons in F centers

c) refraction of light from Na+ ion

d) all of the above

- 24. The crystal with a metal deficiency defect is
 - a) NaCl
- b) FeO
- c) ZnO
- d) KCl
- 25. A two dimensional solid pattern formed by two different atoms X and Y is shown below. The black and white squares represent atoms X and Y respectively. the simplest formula for the compound based on the unit cell from the pattern is



a) XY8

c) XY₂

b) X4Y9

d) XY₄

7-CHEMICAL KINETICS

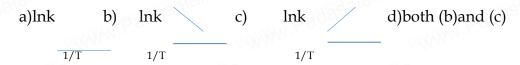
Choose the best answer

- 1. For a first order reaction A \rightarrow the rate constant is x min⁻¹. If the initial concentration of A is 0.01M, the concentration of A after one hour is given by the expression.
 - a) $0.01 e^{-x}$

- b) $1 \times 10^{-2} (1-e^{-60x})$
- c) $(1 \times 10^{-2})e^{-60x}$
- d) none of these
- 2.A zero order reaction $X \longrightarrow Product$, with an initial concentration 0.02M has a half life of 10 min. if one starts with concentration 0.04M, then the half life is
 - a) 10 s

b) 5 min

- c) 20 min
- d) cannot be predicted using the given information
- 3. Among the following graphs showing variation of rate constant with temperature
- (T) for a reaction, the one that exhibits Arrhenius behavior over the entire temperature range is



4.For a first order reaction A \longrightarrow product with initial concentration x mol L⁻¹, has a half life period of 2.5 hours . For the same reaction with initial concentration (x / 2)

- a) (2.5×2.) hours
- b) 2.5/ 2 hours
- c) 25 .hours

d) Without knowing the rate constant, t $_{1/2}$ cannot be determined from the given data

5. For the reaction, $2NH_3 \longrightarrow N_2 + 3H \ 2$ if $-d[NH_3]/d[dt] = k_1 (NH_3)$,

 $d[N_2]/dt = k_2(NH_3)$, $d[H_2]/dt = k_3(NH_3)$, then the relation between k_1 , k_2 and k 3 is

a) $k_1 = k_2 = k_3$

b) $k_1 = 3 k_2 = 2 k 3$

c) $1.5 k_1 = 3 k_2 = k3$

d) $2k_1 = k_2 = 3 k3$

6.The decomposition of phosphine (PH3) on tungsten at low pressure is a first order reaction. It is because the (NEET)

- a) rate is proportional to the surface coverage
- b) rate is inversely proportional to the surface coverage
- c) rate is independent of the surface coverage
- d) rate of decomposition is slow

7. For a reaction Rate = $k[acetone]^{3/2}$ then unit of rate constant and rate of reaction respectively is

- a) $(mol L^{-1}s^{-1}) (mol^{-1/2} L^{-1/2} s^{-1})$
- b) (mol -1/2 L1/2 s-1) (mol L-1 s-1)
- c) ($mol^{1/2} L^{1/2} s^{-1}$)($mol L^{-1} s^{-1}$),
- d) (mol L s⁻¹) ((mol^{1/2} L^{1/2} s⁻¹)

8. The addition of a catalyst during a chemical reaction alters which of the following quantities? (NEET)

a) Enthalpy

b) Activation energy

c) Entropy

d) Internal energy

9. Consider the following statements:

- (i) increase in concentration of the reactant increases the rate of a zero order reaction.
- (ii) rate constant k is equal to collision frequency A if E_a = 0
- (iii) rate constant k is equal to collision frequency A if $E_a = °$
- (iv) a plot of ln(k) Vs T is a straight line.
- (v) a plot of $\ln (k)$ Vs (1/T) is a straight line with a positive slope

Correct statements are

- a) (ii) only
- b) (ii) and (iv) c) (ii) and (v) d) (i), (ii) and (v)

10.In a reversible reaction, the enthalpy change and the activation energy in the forward direction are respectively -x kJ and y kJ mol-1. Therefore, the energy of activation in the backward direction is

a) (y - x)kJ mol -1

b) (x+ y)J mol -1

c) (x-y) kJ mol -1

- d) $(x+y) \times 10^{-3} \text{ J mol}^{-1}$
- 11. What is the activation energy for a reaction if its rate doubles when the temperature is raised from 200K to 400K? ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)
 - a) 234.65 kJ mol⁻¹K⁻¹

b) 434.65 kJ mol ⁻¹K⁻¹

c) 434.65 J mol ⁻¹K⁻¹

- d) 334.65 J mol ⁻¹K⁻¹
- This reaction follows first order kinetics. The rate constant at particular temperature is 2.303 ×10 ⁻² hour ⁻¹. The initial concentration of cyclopropane is 0.25 M. What will be the concentration of cyclopropane after 1806 minutes?

$$log 2 = (0.3010)$$

- a) 0.125M
- b) 0.215M
- c) 0.25×2.303 M
- d) 0.05M
- 13. For a first order reaction, the rate constant is 6.909 min-1. the time taken for 75% conversion in minutes is
 - a) $(3/2)\log 2$
- b) $(2/3) \log 2$
- c) $(3/2)\log(3/4)$
- d) $(2/3)\log(4/3)$
- 14.In a first order reaction x \rightarrow : if k is the rate constant and the initial concentration of the reactant x is 0.1M, then, the half life is
 - a) [log2 /k]
- b) [0.693/0.1]
- c) $[\ln 2/k]$
- d) none of these
- 15. Predict the rate law of the following reaction based on the data given below $2A + B \longrightarrow C + 3D$

Reaction	[A]	[B]	Initial rate
number	(min)	(min)	(M s ⁻¹)
1	0.1	0.1	x
2	0.2	0.1	2 <i>x</i>
3	0.1	0.2	4 <i>x</i>
4	0.2	0.2	8 <i>x</i>

- a) rate $k = [A]^2 [B]$
- b) rate $k = [A] [B]^2$
- c) rate k= [A][B]
- d) rate $k = [A]^{1/2} [B]^{3/2}$

16. Assertion: rate of reaction doubles when the concentration of the reactant is doubles if it is a first order reaction.

Reason: rate constant also doubles

a) Both assert assertion.	tion and reason are true	and reason is the co	rrect explanatio	on of
b) Both assert of assertion.	tion and reason are true	but reason is not the	correct explana	ation
c) Assertion i	s true but reason is false	e. d) Both assertion a	nd reason are f	alse.
17.The rate constant of	of a reaction is 5.8×10^{-2}	S^{-1} . The order of the	reaction is	
a) First order	b) zero order	c) Second order	d) Third ord	er
disappearance of N20 NO2 and O2 is given	$_2$ O ₅ (g) \longrightarrow 2NO ₂ (O ₅ is given as 6.5 ×10 $^{-2}$ respectively as L $^{-1}$ s $^{-1}$) and (1.3× 10 $^{-2}$ r	mol L ⁻¹ s ⁻¹ . The rate o		
b) (1.3× 10 ⁻² mol I	$L^{-1}s^{-1}$) and (3.25× 10 ⁻²)	mol L ⁻¹ s ⁻¹)		
c) (1.3× 10 ⁻¹ mol	$L^{-1}s^{-1}$) and (3.25× 10 ⁻²	mol L ⁻¹ s ⁻¹)		
d) None of these				
	position of H2O2 to give time. The rate of forma		_	inute
a) 0.75 mol min ⁻¹	b) 1.5 mol min ⁻¹	c) 2.25 mol min ⁻¹	d) 3.0 mol m	in ⁻¹
	entration of the reactant n the order of the reacti		for half reaction	on is
a) Zero	b) one c) Fi	raction d) no	one	
	reaction $A \rightarrow B + C$ pression for rate constant			after
a) $k = [2.303/ t] lo$	$g{2P_0 / (3P_0-P)}$			
b) $k = [2.303/t] lo$	$g\{ 2P_0 / (P_0 - P) \}$	1200fg		
c) $k = [2.303/t] lo$ d) $k = [2.303/t] lo$				
	rder reaction was com me conditions would be		, 50% of the s	same
a) 20 minutes minutes	b) 30 minutes	c) 35 minutes	d)	75 90
00 TH 1 16116	10000	110 1 10	E (0 1 1	, ,

22. The half life period of a radioactive element is 140 days. After 560 days , 1 g of element will be reduced to

a) 1/2 g

b) 1/4 g

c) 1/8 g

d) 1/16 g

23. The correct difference between first and second order reactions is that (NEET)

- a) A first order reaction can be catalysed; a second order reaction cannot be catalysed.
 - b) The half life of a first order reaction does not depend on $[A_0]$; the half life of

- a second order reaction does depend on $[A_0]$.
- c) The rate of a first order reaction does not depend on reactant concentrations; the rate of a second order reaction does depend on reactant concentrations.
- d) The rate of a first order reaction does depend on reactant concentrations; the rate of a second order reaction does not depend on reactant concentrations.

24. After 2 hours, a radioactive substance becomes (1/16) th of original amount Then the half life (in min) is

- a) 60 minutes
- b) 120 minutes
- c) 30 minutes
- d) 15 minutes



UNIT I- METALLURGY

1. Choose the correct answer:

- 1.Bauxite has the composition
 - a) Al2O3
- b) Al2O3.nH2O
- c) Fe2O3.2H2O
- d)None of these
- 2. Roasting of sulphide ore gives the gas (A).(A) is a colourless gas. Aqueous solution of (A) is acidic.

The gas (A) is

- a) CO2
- b) SO3
- c) SO2

d) H2S

3. Which one of the following reaction represents calcinations?

a)
$$2Zn + O_2 \longrightarrow 2ZnO 2$$

b)
$$2ZnS + 3O_2 \longrightarrow ZnO + 2SO_2$$

c)MgCO₃
$$\longrightarrow$$
 MgO + CO 2

- d)Both (a) and
- 4. The metal oxide which cannot be reduced to metal by carbon is
 - a) PbO
- b) Al₂O₃
- c) ZnO

- d) FeO
- 5. Which of the metal is extracted by Hall-Heroult process?
 - a) Al
- b) Ni
- c) Cu

- d) Zn
- 6. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true?
 - a) ΔGf of sulphide is greater than those for CS2 and H₂S.
 - b) Δ Gr⁰ is negative for roasting of sulphide ore to oxide
 - c) Roasting of the sulphide to its oxide is thermodynamically feasible.
 - d) Carbon and hydrogen are suitable reducing agents for metal sulphides.
- 7. Match items in column I with the items of column II and assign the correct code.

क्षिष्ठ	Column-I		Column-II
A	Cyanide process	(i)	Ultrapure Ge
В	Froth floatation proces	(ii)	Dressing of ZnS
С	Electrolytic reduction	(iii)	Extraction of Al
D	Zone refining	(iv)	Extraction of Au
3/8/18	004033313	(v)	Purification of Ni

Magazi	A	В	С	В		
(a)	(i)	(ii)	(iii)	(iv)		
(b)	(iii)	(iv)	(v)	(i)		
(c)	(iv)	(ii)	(iii)	(i)		
(d)	(ii)	(iii)	(i)	(v)		

8. Wolframite ore is

separated from tinstone by the process of

- a) Smelting
- b) Calcination
 - c) Roasting
- d) Electromagnetic separation

9. Which one of the follo	owing is not feasible	e 30880	
a) $Zn(s) + Cu^{2+}(aq)$	\longrightarrow Cu(s) + Z	Zn²+(aq)	
b) $Cu(s) + Zn^{2+}(aq)$	Zn(s) + 0	Cu ²⁺ (aq)	
c) $Cu(s) + 2Ag^{+}(aq)$	\longrightarrow Ag(s) + 0	$Cu^{2+}(aq)$	
d) Fe(s) + Cu ²⁺ (aq) 10.Electrochemical prod		_	
a) Iron	b) Lead	c) Sodium	d) silver
11 Flux is a substance v	which is used to con	vert	
a) Mineral into s	ilicate b) Infus	sible impurities to so	luble impurities
c) Soluble impur	rities to infusible im	purities d) All of	these
12. Which one of the fo method?	llowing ores is best	concentrated by frot	h – floatation
a) Magnetite	b) Hematite	c) Galena	d) Cassiterite
13In the extraction of a	luminium from aluı	mina by electrolysis,	cryolite is added to
a) Lower the me alumina	elting point of alum	nina b) Remov	ve impurities from
c) Decrease the e	electrical conductivi	ty d) Increase the 1	rate of reduction
14. Zinc is obtained fro	m ZnO by		
a) Carbon reduc			tion using silver
c) Electrochemic	11.50 PART 7 /	d) Acid l	eaching
15. Cupellation is a pro			
a) Silver	b) Lead	c) Coppe	,
16. Extraction of gold a recovered by	nd silver involves l	eaching with cyanide	ion. silver is later
a) Distillation b	Zone refining c)	Displacement with	zinc d) liquation
17. Considering Ellingh reduce alumina?	nam diagram, which	n of the following me	tals can be used to
a) Fe	b) Cu	c) Mg	d) Zn
18. The following set of	reactions are used	in refining Zirconiun	n
Zr (impure) + 2I ₂ 523	^{8k} → ZrI ₄		
ZrI_4 ^{1800k} Zr	(pure) $+2I_2$ This met	thod is known as	
a) Liquation b) 19. Which of the follow	van Arkel process of ing is used for conc	,	Mond's process lllurgy?
a) Leaching	b) Roasting c)	Froth floatation d)	Both (a) and (c)

- 20. The incorrect statement among the following is
 - a) Nickel is refined by Mond's process
 - b) Titanium is refined by Van Arkel's process
 - c) Zinc blende is concentrated by froth floatation
- d) In the metallurgy of gold, the metal is leached with dilute sodium chloride solution
- 21. In the electrolytic refining of copper, which one of the following is used as anode?
 - a) Pure copper

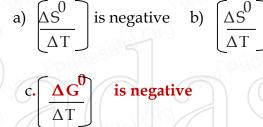
b) Impure copper

c) Carbon rod

- d) Platinum electrode
- 22. Which of the following plot gives Ellingham diagram
 - a) ΔS Vs T

b) ΔG^0 Vs T

- c) $\Delta G^0 \text{ Vs } 1/\text{T } 0$
- d) $\Delta G^0 \text{ Vs T}^2$
- 23. In the Ellingham diagram, for the formation of carbon monoxide



d) initially $\begin{bmatrix} \underline{\Delta} \mathbf{T} \\ \Delta G^0 \end{bmatrix}$ is positive after $700^{\circ} \mathbf{C}$ $\begin{bmatrix} \underline{\Delta} G^0 \\ \overline{\Delta} \mathbf{T} \end{bmatrix}$ is negative

24. Which of the following reduction is not thermodynamically feasible?

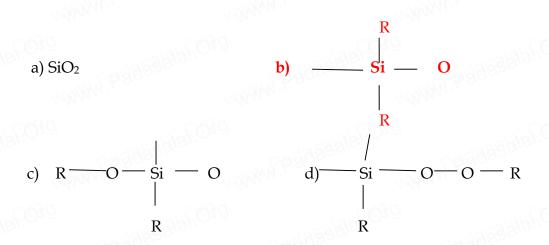
a)
$$Cr_2 O_3 + 2Al \longrightarrow Al_2 O_3 + 2Cr$$
 b) $Al_2O_3 + 2Cr \longrightarrow Cr_2O_3 + 2Al$

- c) $3\text{TiO}_2 + 4\text{Al} \longrightarrow 2 \text{Al}_2 \text{O}_3 + 3\text{Ti}$
- d) none of these
- 25. Which of the following is not true with respect to Ellingham diagram?
- a) Free energy changes follow a straight line. Deviation occurs when there is a phase change.
- b) The graph for the formation of CO2 is a straight line almost parallel to free energy axis.
- c) Negative slope of CO shows that it becomes more stable with increase in temperature.
- d) Positive slope of metal oxides shows that their stabilities decrease with increase in temperature.

UNIT 2-p-Block elements-I

Choose the correct answer:

1.An aqueous solution of	boray is		
		d) amphote	ric Poggassa
2. Boric acid is an acid bec		//	MMM
			0019
a) contains replaced	able H+ ion	b) giv	es up a proton
c) combines with pawater, releasing proton.	roton to form	water molecule	d) accepts OH- from
3. Which among the follow	wing is not a b	orane?	
a) $B_2 H_6$ b) B_3	Н 6 с)В4 Н	H_{10} d) none of the	nese
4. Which of the following	metals has the	e largest abundance i	n the earth's crust?
a) Aluminium	b) calcium	c) Magnesium	d) sodium
5. In diborane, the number	r of electrons	that accounts for ban	ana bonds is
a) six	b) two	c) four	d) three
6. The element that does not is	not show cater	nation among the foll	owing p-block element
a) Carbon	b) silicon	c) Lead	d) germanium
7. Carbon atoms in fullere	ne with form	ula C60 have	
a) sp3 hybridised		b) sp hybrid	lised
<i>c) sp<mark>2 hybridised</mark></i> hybridised		d) partially	sp2 and partially sp3
8. Oxidation state of carbo	on in its hydri	des	
a) +4	b) -4	c) +3	d) +2
9. The basic structural uni	t of silicates is	s (NEET)	
a) (SiO ₃) ²⁻	b) (SiO ₄) ²⁻	c) (SiO)-	d) (SiO ₄) ⁴⁻
10.The repeating unit	in silicone is	s Aggarations	



D 3

3

3

11. Which c	of these is not a	monomer for	a high mole	ecular ma	ass silico	one polyme:	r?
a) M	e3SiCl	b) PhSiCl3	c) M	eSiCl3		d) Me2SiCl	2
12. Which c	of the following	is not sp2 hy	bridised?				
a) Gı	raphite	b) graphene	c) Fu	ıllerene		d) dry ice	
13. The geo	metry at which	carbon atom	in diamond	are bone	ded to e	ach other is	
a) Te	etrahedral	b) hexagona	ıl c) O	ctahedra	1	d) none of t	hese
14. Which c	of the following	statements is	not correct?				
a) Be	eryl is a cyclic s	ilicate b) Mg	g2SiO4 is an	orthosili	cate		
c) Sio alumino	O44-is the basi osilicate	c structural u	nit of silicate	es	d) Feld	dspar is not	
15. AlF3 is s (NEET)	soluble in HF o	nly in the pre	sence of KF.	It is due	to the f	ormation of	- 11800 - 11800
a) K	₃ (AlF ₃ H ₃)	b) K 3(AlF 3)	dasalal	c) AlH	3 d) K(AlF ₃ H)	
16. Match it code.	tems in column	- I with the i	tems of colu	mn – II a	nd assig	gn the corre	ct
Col	umn-I	Colum	n-II				
A	Borazole	1	B(OH)3		A	В	C
В	Boric acid	2	B3N3H6	(a)	2	1	4
C	Quartz	3	Na2[B4O5 (OH)4]	(b)	1	2	4
			8H2O				
D	Borax	4	SiO2	(c)	1	2	1919
				(d)	None of these		
17. Duralur	nin is an alloy o	of			021030		
a) Cu,M	n 000000000	b) Cu,Al,Mg	c) A	l,Mn		d) Al,Cu,Mı	n,Mg
18.Thermoo	dynamically the	e most stable	form of carb	on is			
a) Diam	ond	b) graphite	c) F	ullerene		d) none of t	hese
19. The com	npound that is	used in nucle	ar reactors as	s protect	ive shie	lds and con	trol
rods is							
	<i>l borides</i> vility of +1 oxid	b) metal oxidation state in	• \			d) metal cai	bide
a) $Al <$	Ga < In < Tl		b) T	1 < In <	Ga < A	1	
c) In	< T1 < Ga < A	1	d) C	Ga< In <	A1 < T	1	

Unit -3 P- BLOCK ELEMENTS-II

Choose the best answer:

1. In which of the following	, NH₃ is not us	sed?	
a) Nessler's reagent			
b) Reagent for the analys	is of IV group	basic radical	
c) Reagent for the analysi	_		
d) Tollen's reagent	0110		
2. Which is true regarding n	itrogen?		
a) least electronegative el	ement		
b) has low ionisation entl	nalpy than oxy	ygen	
c) d- orbitals available	on o	0.543/3/21-0"	
d) ability to form pл - рл		r and a second	1. 1. 1.1
3. An element belongs to gro	-	d period of the per	riodic table, its
electronic configuration v a) 1s ² 2s ² 2p ⁴	would be b) 1s ² 2s ² 2p	20019	
c) 1s ² 2s ² 2p ⁴ 3s ² 3p ²	d) $1s^2 2s^2 2p$		
- MADA	T. WARRELL	Maara.	l am allin a an a/D
4. Solid (A) reacts with stron	U -	_	00,
which spontaneously but respectively	in in air giving	g smoky migs. A a	ind b are
	1000	985	
a) P ₄ (red) and PH ₃ c) S ₈ and H ₂ S	b) P₄(white) d) P₄(white)		
5. In the brown ring test, bro	400		
a) a mixture of No and NO			
c) Ferrous nitrate	LANDAN N	erric nitrate	
6. On hydrolysis, PCl ₃ gives	099		
a) H₃PO₃ b) I	PH ₃	c) H ₃ PO ₄	d) POCl ₃
7. P ₄ O ₆ reacts with cold water	r to give	MARAN	,
	×9:0	\	1) 11 DO
a) H_3PO_3 b) 1	$H_4P_2O_7$	c) HPO ₃	d) H ₃ PO ₄
8. The basicity of pyrophospho	ALMANA * *	A NAMA	P.P.Soc.
a) 4 b) 2		c) 3	d) 5
9. The molarity of given orthoga <i>a</i>) 6 <i>N</i> b) 4		c) 2N	normality is d) none of these
10. Assertion : bond dissociation			10200
Reason: chlorine has more elec		-	. 42.22.2.2
a) Both assertion and reason as			olanation of
assertion.	010	aldia COIO	2999601A
b) Both assertion and reason ar	re true but reas	on is not the correct	explanation of
assertion.	is falso		
c) Assertion is true but reason <i>d</i>) <i>Roth assertion and reason a</i>			

11. Among the follo	owing, which is the	strongest c	xidizing age	nt?	
a) Cl ₂ b) F₂	c) Br ₂		d) l_2		
12. The correct orde	er of the thermal sta	bility of hy	drogen halid	le is	
a) $HI > HBr > HCl$			HCl > HBr > 1		
c) HCl > HF > HBr	> HI	d) HI > I	HCl > HF > H	IBr	
40 717 4 1 1 1 1 1 1 1		Mil	. 10 ////		
	e following compou			1\ N E ~	
a) XeOF ₄	b) XeO ₃	c)	XeF ₂	d) NeF ₂	
14. Most easily liqu a) Ar	b) Ne	c) He	30.	l) Kr	
, " UMW MANA	ete hydrolysis produ		V/V/	ı) Kı	
a) XeOF ₄	b) XeO ₂ F ₂		XeO_3	d) XeO ₂	
	ith iodine, sulphite i			2000	
a) S ₄ O ₆ ²⁻	A'A9J" -		SO ₄ ²⁻	d) SO ₃ ²⁻	
17. Which of the fol	llowing is strongest	acid amon	g all?		
a) HI	b) HF	c) HBr		d) HCl	
18. Which one of t	the following order	rs is corre	ct for the bo	nd dissociation	
	logen molecules? (
a) $Br_2 > I_2 > F_2 > 0$	e .	,	$l_2 > Br_2 > I_2$		
a) $BI_2 > I_2 > F_2 > C$ c) $I_2 > Br_2 > Cl_2 >$,	$\frac{\mathbf{I}_2}{\mathbf{F}_2} > \mathbf{I}_2$ $\mathbf{F}_2 > \mathbf{F}_2 > \mathbf{I}_2$		
1 1 1 20		, pages.			
19. Among the fol	llowing the correct	order of	acidity is (N	EEI)	
a) HClO ₂ < HClO	$O < HClO_3 < HClO_4$, , , , , , , , , , , , , , , , , , ,		$21O_2 < HC1O < HC1O_3$	
c) HClO ₃ < HClO	$O_4 < HClO_2 < HClO$	d	HClO < HC	$10_2 < HClO_3 < HClO_4$	
20. When copper	is heated with cond	c HNO ₃ it	produces		
a) Cu(NO ₃) ₂ , NO	O and NO ₂	b)	Cu(NO ₃) ₂ an	d N₂O	
c) Cu(NO ₃) ₂ and	NO_2	d)	$Cu(NO_3)_2$ an	d NO	
350.	19932x,	paddas	30	paddas.	
Unit-4- TRANS	ITION AND INN	NER TRA	NSITION	ELEMENTS	
Choose the best a	inswer:				
1. Sc(Z=21) is a tra	nsition element but	t Zinc (z=3	(80) is not because	ause	
a) both Sc3+ and	d Zn2+ ions are colo	urless and	form white o	compounds.	
b) in case of Sc,	3d orbital are parti	ally filled	but in Zn the	se are completely fille	2d
c) last electron a	as assumed to be add	ded to 4s le	evel in case of	f zinc	
,	Zn do not exhibit va				
,				enultimate d sub she	11
	filled valence sub sl		1818 P	22/2/2	_
a) Cr	b) Pd	c) Pt	d	l) none of these	
3. Among the trans	sition metals of 3d s	eries, the	one that has	highest negative (M²	+/

M) standard electrode potential is

a) Ti	b) Cu	c) Mn	d) Zn
4. Which one of present in V		has the same numb	er of unpaired electrons as
a) Ti ³⁺	b) Fe ³⁺	c) Ni ²⁺	d) Cr ³⁺
5. The magnetic	moment of Mn2+	ion is	
a) 5.92BM	b) 2.80BM	c) 8.95BM	d) 3.90BM
6. Which of the	following compou	nds is colourless?	
a) Fe ³⁺	b) Ti ⁴⁺	c) Co ²⁺	d) Ni ²⁺
7. the catalytic b mainly due t		ion metals and their	compounds is ascribed
a) their magn	etic behaviour	b)	their unfilled d orbitals
c) their abilit	y to adopt variable	e oxidation states d) their chemical reactivity
8. The correct or	der of increasing o	xidizing power in th	ne series
a) $VO_2^+ < Cr_2$	$O_{7^{2-}} < MnO_{4^{-}}$	b) $Cr_2O_7^{2-} < VO_2^{2-}$	$_2$ $^+$ $<$ MnO_4 $^-$
c) $Cr_2O_7^{2-} < N$	InO_4 - $<$ VO_2 +	d) MnO	$_{4}$ $Cr_{2}O_{7}^{2}$ $<$ VO_{2}^{+}
9. The alloy of c	opper that contain	Zinc is	
a) Monel met	al b) Brons	ze c) bell m	etal d) brass
10. Which of the	following does no	ot give oxygen on he	ating?
a) K2Cr2O7	b) (NH4)	02Cr2O7 c) KClO	d) Zn(ClO3)2
11. In acid medi	um, potassium per	manganate oxidizes	oxalic acid to
a) oxalate	b) Carbon diox	<mark>ide</mark> c) acetat	e d) acetic acid
12. Which of the	following stateme	ents is not true?	
a) on passing observed.	H2S, through acid	ified K2Cr2O7 soluti	on, a milky colour is
b) Na2Cr2O7	' is preferred over K	2Cr2O7 in volumetri	ic analysis
c) K2Cr2O7 s	olution in acidic m	edium is orange in co	olour
d) K2Cr2O7 s	solution becomes y	ellow on increasing t	he PH beyond 7
13. Permangana	te ion changes to _	in acidic me	dium
a) MnO4 ²⁻	b) Mn ²⁺	c) Mn ³⁺	d) MnO2
and also form	ms a yellow precip	pitate . The gas (B) t	liberate a suffocating gas (B) turns potassium dichromate solution(C). A,B and C are
a) Na_2SO_3 , S	O_2 , $Cr_2(SO_4)$ 3	b) Na ₂ S ₂ 0	O ₃ , SO ₂ , Cr ₂ (SO ₄) 3
c) $Na_2 S$, SO_2	, Cr ₂ (SO ₄) 3	d) Na ₂ So	O ₄ , SO ₂ Cr ₂ (SO ₄) 3
15. MnO4- react	with Br-in alkalin	e PH to give	
a) BrO ₃ -, Mn	O2, b) Br ₂ ,	MnO4 ²⁻ c) Br ₂ , N	InO2 d) BrO- , MnO4 ² -

	low many moles of I2 eact with potassium i		l when 1 m	ole of potassi	um dichromate
a)) 1	b) 2	c) 3	3	d) 4
	The number of moles errous oxalate(FeC2O		MnO4 req	uired to oxidi	ze 1 mole of
a)) 5	b) 3	c) 0	0.6	d) 1.5
Sat	When a brown compo The gas (B) taken in ex C). The compound A,	cess reacts w	,		0 , ,
a	$) MnO_2$, Cl_2 , NCl_3		b) MnO, 0	Cl ₂ , NH ₄ Cl	
c)	Mn ₃ O ₄ , Cl ₂ , NCl ₃		d) MnO ₃	, Cl_2 , NCl_3	
19. W	Which one of the follo	wing stateme	ents related	l to lanthanon	s is incorrect?
a)	Europium shows +2	oxidation sta	te.		
b)) The basicity decreas	es as the ionic	radius dec	reases from Pr	to Lu.
c)	All the lanthanons a	re much more	reactive th	ıan aluminium	. pg6355
d)) Ce4+ solutions are v	videly used as	oxidising	agents in volu	metric analysis.
20. W	Which of the followin	g lanthanoid	ions is dia	magnetic?	
a)) Eu ²⁺	<i>b)</i> Yb ²⁺	c) (Ce ²⁺	d) Sm ²⁺
la	Which of the followin anthanoids?	g oxidation st	tates is mos		ong the
,	ssertion : Ce4+ is use		N. T. G		analysis.
R	eason: Ce4+ has the t	tendency of a	ttaining +3	oxidation stat	te.
) Both assertion and 1 ssertion.	reason are tru	e and reaso	n is the correc	t explanation of
b)) Both assertion and ressertion.	eason are true	but reasor	is not the cor	rect explanation of
	Assertion is true but				
,) Both assertion and r				
	he most common oxi				1)
_10/01) +2	b) +3	c) +		d) +6
	The actinoid elements		00800		
) Np, Pu ,Am	b) U, Fm, Th	,	J, Th, Md	d) Es, No, Lr
	Which one of the follo	.: ()(0)19			
) La(OH)2 is less basi			181.	
,) In lanthanoid series				1.7.
	La is actually an eler				
ď	Atomic radii of Zr a	nd Hf are sam	e because o	of lanthanide c	ontraction

UNIT 5-COORDINATIONCHEMISTRY

Choose the correct answer:

1. The sun	n of primary	valance and	l secondary	valance of	the metal	M in the
comple	x					

[M (en)₂ (Ox) Cl is]
a) 3 b) 6 c) -3 d) 9

2. An excess of silver nitrate is added to 100ml of a 0.01M solution of pentaaquachloridochromium(III)chloride. The number of moles of AgCl precipitated would be

a)0.02 <u>b) 0.002</u> c) 0.01 d) 0.2

3. A complex has a molecular formula MSO₄Cl. 6H₂O .The aqueous solution of it gives white precipitate with Barium chloride solution and no precipitate is obtained when it is treated with silver nitrate solution. If the secondary valence of the metal is six, which one of the following correctly represents the complex?

a) [M (H₂O)₄Cl] SO₄.2H₂O

b) [M (H₂O)₆] SO₄

c) [M (H₂O)₅ Cl] SO₄.H₂O

d) [M (H₂O)₃ Cl] SO₄.3H₂O

4. Oxidation state of Iron and the charge on the ligand NO in [Fe (H₂O)₅ NO]SO₄

are

a) +2 and 0 respectively

b) +3 and 0 respectively

c) +3 and -1 respectively

d) +1 and +1 respectively

5. As per IUPAC guidelines, the name of the complex [Co(en)2 (ONO)CI]Cl is

- a) chlorobisethylenediaminenitritocobalt(III) chloride
- b) chloridobis(ethane-1,2-diamine)nitro K -Ocobaltate(III) chloride
- c) chloridobis(ethane-1,2-diammine)nitritoK-Ocobalt(II) chloride
- d) chloridobis(ethane-1,2-diamine)nitro K-Ocobalt(III) chloride
- 6. IUPAC name of the complex K_3 [Al (C_2O_4)] is
 - a) potassiumtrioxalatoaluminium(III)
 - b) potassiumtrioxalatoaluminate(II)
 - c) potassiumtrisoxalatoaluminate(III)
 - d) potassiumtrioxalatoaluminate(III)

(NE		Will be shown by one among the following
) TiCl ₄ b) [CoCl ₆] ⁴⁻ Crystal field stabilization ene	c) [Cu (NH ₃) ₄] ²⁺ d) [Ni (CN) ₄] ²⁻ ergy for high spin d ⁵ octahedral complex is
а	a) $-0.6\Delta_0$	b) 0
C	e) 2(P -Δ0)	d) $2(P + \Delta 0)$
9. I	n which of the following coo	ordination entities the magnitude of $\Delta 0$ will be
max	imum?	
a) [Co (CN) ₆] ³⁻	b) [Co (C ₂ O ₄) ₃] ³⁻
c)	[Co (H ₂ O) ₆] ³⁺	d) [Co (NH ₃) ₆] ³⁺
10.	Which one of the following	will give a pair of enantiomorphs?
a	ı) [Cr (NH3)][Co (CN)6]	b) [Co (en) ₂ cl ₂ ,] Cl
C) [Pt (NH ₃) ₄][PtCl ₄]	d) [Co (NH ₃) ₄ Cl ₂] NO ₂
1	1. Which type of isomerism	is exhibited by [Pt (NH ₃) Cl ₂]?
a) Coordination isomerism	b) Linkage isomerism
C) Optical isomerism	d) Geometrical isomerism
12.	How many geometrical isom	ners are possible for [Pt(Py)(NH ₃)(Br)(Cl)]?
a	b) 4	c) 0 d) 15
13.	Which one of the following	pairs represents linkage isomers?
	a) [Cu (NH ₃) ₄][PtCl ₄] a	and [Pt (NH ₃) ₄][CuCl ₄]
	b) [Co(NH ₃) ₅ (NO ₃)]SO	4 and [Co(NH ₃) ₅ (ONO)]
	c) [Co(NH ₃) ₄ (NCS) ₂]C	Cl and $[Co(NH_3)_4(SCN)_2]Cl$
14.	d) both (b) and (c) Which kind of isomerism is	possible for a complex [Co(NH ₃) ₄ Br ₂] C <i>l</i> ?
a a) geometrical and ionization	b) geometrical and optical
C) optical and ionization	d) geometrical only
15.	Which one of the following	complexes is not expected to exhibit isomerism?
	a)[Ni (NH ₃) ₄ (H ₂ O)] ²⁺	b)[Pt (NH ₃) Cl ₂]
	c) [Co (NH ₂) ₅ SO ₄] <i>Cl</i>	d)[Fe(en) ₂] ³⁺

16.	A complex in which the o	xidation	number of the metal is zero is	
	a) K ₄ [Fe (CN) ₆]		b) [Fe (CN) ₃ (NH ₃) ₃]	
	c) [Fe (CO) ₅]		d) both (b) and (c)	
17.	Formula of tris(ethane-1,2	2-diamine	e)iron(II)phosphate	
18.	a) [Fe (CH ₃ -CH(NH ₂) ₂)](PC c) [Fe(H ₂ N-CH ₂ -CH ₂ -NH ₂) Which of the following is	$_{3}](PO_{4})_{2}$	b) [Fe (H ₂ N-CH ₂ -CH ₂ -NH ₂) ₂ d) [Fe(H ₂ N-CH ₂ -CH ₂ -NH ₂) ₃] ₃ (l gnetic in nature?	- '
10	a) [Zn (NH ₃) ₄] ²⁺ c) [Ni (H ₂ O) ₆] ²⁺ Fac-mer isomerism is sho	ove by	b) [Co (NH ₃) ₆] ³⁺ d) [Ni (CN) ₄] ²⁻	
1).	a) [Co (en) ₃] ³⁺	wii by	b) [Co(NH ₃) ₄ (Cl) ₂] ⁺	
	c) [Co $(NH_3)_3(Cl)_3$]		d) [Co (NH ₃) ₅ Cl] SO ₄	
20.	Choose the correct statem	nent.		
	a)Square planar complexe	s are mor	e stable than octahedral comple	xes
pla	b)The spin only magnetion	c momen	t of [Cu(Cl) ₄] is 1.732 BM and	it has square
	c)Crystal field splitting en	ergy (Δ_0) o	of $[FeF_6]^{4-}$ is higher than the (Δ_0)	of [Fe (CN) ₆] ⁴
	d)crystal field stabilization stabilization of [Ti(H	I ₂ O) ₆] ²⁺	of [V (H_2O)6]+ is higher than th ΓATE	e crystal field
Ch	oose the best answer:			
1. (Graphite and diamond are			
	a) Covalent and molecular	crystals	b) ionic and covalent crystals	
	c) both covalent crystals		d) both molecular crystals	
2. A	A N. 7.4 \		in fcc type crystal structure with ying entre of the cube. the corre	
	a) AB b)	AB3	c) A3B	d) A8B6
3. 1	The ratio of close packed ato	ms to tet	rahedral hole in cubic packing is	3
	a) 1:1 b) 1	1:2	c) 2:1	d) 1:4
4. 5	folid CO2 is an example of			
	a) Covalent solid b) metalli	c solid	c) molecular solid d) ionic so	lid
5. <i>A</i>	Assertion : monoclinic sulph	nur is an e	example of monoclinic crystal sy	stem
	nson: for a monoclinic system		0.69.0	
	1089910		105000	

a) Both assertion.	on and reaso	n are true	and reason is the	e correct explana	ation of
b) Both assertion.	on and reason	are true b	ut reason is not th	ne correct explan	ation of
c) Assertion is t	rue but reaso	n is false.			
d) Both assertic					
6. In calcium fluor ion and F- Ion a	~ '.A ()(1 U · ·	he flurite st	ructure the coord	ination number	of Ca2+
a) 4 and 2		and 6	c) 8 and 4	d) 4 and 8	3
7. The number of u in bcc pattern is	_			ass 40) which cry	stallizes
a) 6.023 X 10 ²³		b) 6.023	X 10 ²²		
c) 60.23 X 10 ²³		d) 6 023 >	<10 ²³		
		8. ×	40		
8. The number of c	arbon atoms	per unit cel	l of diamond is		
a) 8	b) 6		c) 1	d) 4	
9. In a solid atom by atom N. find th	e formula of s	-	d by M and N.		ccupied
a) MN	b) M ₃ N	30	c) MN ₃	d) M ₃ N ₂	N89
10. The composition the form of Fe3		e of wurtzi	te is Fe _{0.93} O _{1.00} w	hat % of Iron pr	esent in
a) 16.05%	b) 1	5.05%	c) 18.05%	d) 17.05%	, 1000
11. The ionic radii number of each		– are 098×1	0 ⁻¹⁰ .m and 1.81× 1	10 ⁻¹⁰ .m the coord	dination
a) 8	b) 2		c) 6	d) 4	
12. CsCl has bcc a distance is	arrangement,	its unit ce	ll edge length is	400pm, its inter	atomic
a) 400pm	b) 800pm	c)	√3 100×pm	d) $(3\sqrt{2}) \times 4$	100 pm
13. A solid compouradius of the ar		aCl structu	re. if the radius of	the cation is 100 ₁	pm, the
a) (100//041	b) (0.	. 732/100)	c) 100× 0414	d) (0.414/	′ 100)
14. The vacant spa	ce in bcc lattic	ce unit cell i	s		
a) 48%	b) 23	%	c) 32%	d) 26%	
15. The radius of a length oif the e			stallizes in a face o	entered cubic lat	tice, the
a) 488.5pm		8.5pm	c) 884.5pm	d) 484.5p	m

- 16. The fraction of total volume occupied by the atoms in a simple cubic is a) $\frac{\pi}{4\sqrt{2}}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{3\sqrt{2}}$
- 17. The yellow colour in NaCl crystal is due to
 - a) excitation of electrons in F centers
 - b) reflection of light from Cl- ion on the surface
 - c) refraction of light from Na+ion
 - d) all of the above
- 18. If 'a' stands for the edge length of the cubic system; sc, bcc, and fcc. Then the ratio of radii of spheres in these systems will be respectively.

a)
$$\frac{1}{2}a:\frac{\sqrt{3}}{2}a:\frac{\sqrt{2}}{2}a$$

b) $(\sqrt{1}a:\sqrt{3}a:\sqrt{2}a)$
c) $\frac{1}{2}a:\frac{\sqrt{3}}{4}a:\frac{1}{2\sqrt{2}}a$
d) $\frac{1}{2}a:\sqrt{3}a:\frac{1}{\sqrt{2}}a$

19. if 'a' is the length of the side of the cube, the distance between the body centered atom and one corner atom in the cube will be

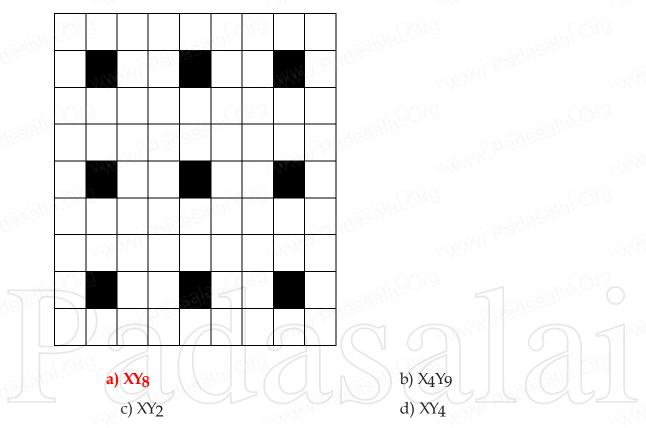
a)
$$(\frac{2}{\sqrt{3}})a$$
 b) $(\frac{4}{\sqrt{3}})a$ c) $(\frac{\sqrt{3}}{4})a$ d) $(\frac{\sqrt{3}}{2})a$

- 20. Potassium has a bcc structure with nearest neighbor distance 4.52 A0 . its atomic weight is 39. its density will be
 - a) 915 kg m⁻³ b) 2142 kg m⁻³ c) 452 kg m⁻³ d) 390 kg m⁻³
- 21. Schottky defect in a crystal is observed when
 - a) unequal number of anions and anions are missing from the lattice
 - b) equal number of anions and anions are missing from the lattice
 - c) an ion leaves its normal site and occupies an interstitial site
 - d) no ion is missing from its lattice.
- 22. The cation leaves its normal position in the crystal and moves to some interstitial position, the defect in the crystal is known as
 - a) Schottky defect b) Fcenter c) Frenkel defect d)non-stoichiometric defect
- 23. Assertion: due to Frenkel defect, density of the crystalline solid decreases.

Reason: in Frenkel defect cation and anion leaves the crystal.

- a) Both assertion and reason are true and reason is the correct explanation of assertion.
- b) Both assertion and reason are true but reason is not the correct explanation of assertion.
- c) Assertion is true but reason is false.
- d) Both assertion and reason are false

- 24. The crystal with a metal deficiency defect is
 - a) NaCl
- b) FeO
- c) ZnO
- d) KCl
- 25. A two dimensional solid pattern formed by two different atoms X and Y is shown below. The black and white squares represent atoms X and Y respectively. the simplest formula for the compound based on the unit cell from the pattern is



7-CHEMICAL KINETICS

Choose the best answer

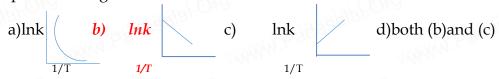
- 1.For a first order reaction A \longrightarrow the rate constant is $x \min^{-1}$. If the initial concentration of A is 0.01M, the concentration of A after one hour is given by the expression.
 - a) $0.01 e^{-x}$

- b) $1 \times 10^{-2} (1-e^{-60x})$
- c) $(1 \times 10^{-2})e^{-60x}$
- d) none of these
- 2.A zero order reaction X ——>Product , with an initial concentration 0.02M has a half life of 10 min. if one starts with concentration 0.04M, then the half life is
 - a) 10 s

b) 5 min

- c) 20 min
- d) cannot be predicted using the given information

3. Among the following graphs showing variation of rate constant with temperature (T) for a reaction, the one that exhibits Arrhenius behavior over the entire temperature range is



- 4. For a first order reaction A \longrightarrow product with initial concentration x mol L⁻¹, has a half life period of 2.5 hours. For the same reaction with initial concentration (x/2)
 - a) (2.5×2.) hours
- b) 2.5/ 2 hours
- c) 25 .hours
- d) Without knowing the rate constant, $t_{1/2}$ cannot be determined from the given data
- 5. For the reaction, $2NH_3 \longrightarrow N_2 + 3H + 2$ if $-d[NH_3]/d[dt] = k_1(NH_3)$,
 - $d[N_2]/dt = k_2(NH_3)$, $d[H_2]/dt = k_3(NH_3)$, then the relation between k_1 , k_2 and k3 is

a)
$$k_1 = k_2 = k_3$$

b)
$$k_1 = 3 k_2 = 2 k 3$$

c)
$$1.5 k_1 = 3 k_2 = k3$$

d)
$$2k_1 = k_2 = 3 k3$$

- 6. The decomposition of phosphine (PH3) on tungsten at low pressure is a first order reaction. It is because the (NEET)
 - a) rate is proportional to the surface coverage
 - b) rate is inversely proportional to the surface coverage
 - c) rate is independent of the surface coverage
 - d) rate of decomposition is slow
- 7. For a reaction Rate = $k[acetone]^{3/2}$ then unit of rate constant and rate of reaction respectively is

a)
$$(\text{mol } L^{-1}s^{-1}) (\text{mol}^{-1/2} L^{-1/2} s^{-1})$$
 b) $(\text{mol } -\frac{1}{2} L^{1/2} s^{-1}) (\text{mol } L^{-1} s^{-1})$

b)
$$(mol - 1/2 L^{1/2} s^{-1}) (mol L^{-1} s^{-1})$$

c) (
$$mol^{1/2} L^{1/2} s^{-1}$$
)($mol L^{-1} s^{-1}$),

- 8. The addition of a catalyst during a chemical reaction alters which of the following quantities? (NEET)
 - a) Enthalpy

b) Activation energy

c) Entropy

- d) Internal energy
- 9. Consider the following statements:
 - (i) increase in concentration of the reactant increases the rate of a zero order reaction.
 - (ii) rate constant k is equal to collision frequency A if $E_a = 0$
 - (iii) rate constant k is equal to collision frequency A if $E_a = {}^{\circ}$
 - (iv) a plot of ln(k) Vs T is a straight line.

(v) a plot of $\ln (k) \operatorname{Vs} (1/T)$ is a straight line with a positive slope

Correct statements are

10.In a reversible reaction, the enthalpy change and the activation energy in the forward direction are respectively -x kJ and y kJ mol⁻¹. Therefore , the energy of activation in the backward direction is

a)
$$(y - x)kJ \text{ mol } -1$$

b)
$$(x + y)$$
J mol⁻¹

c)
$$(x-y)$$
 kJ mol -1

d)
$$(x+y) \times 10^{-3} J \ mol^{-1}$$

11.What is the activation energy for a reaction if its rate doubles when the temperature is raised from 200K to 400K? ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

12. This reaction follows first order kinetics. The rate constant at particular temperature is 2.303 ×10 -2 hour -1. The initial concentration of cyclopropane is 0.25 M. What will be the concentration of cyclopropane after 1806 minutes?

$$\log 2 = (0.3010)$$

13.For a first order reaction, the rate constant is 6.909 min-1.the time taken for 75% conversion in minutes is

a)
$$(3/2)\log 2$$

14.In a first order reaction $x \rightarrow y$: *if* k is the rate constant and the initial concentration of the reactant x is 0.1M, then, the half life is

a)
$$[log2/k]$$

d) none of these

15. Predict the rate law of the following reaction based on the data given below $2A + B \longrightarrow C + 3D$

Reaction number	[A] (min)	[B] (min)	Initial rate (M s ⁻¹)
1	0.1	0.1	x
2	0.2	0.1	2 <i>x</i>
3	0.1	0.2	4 <i>x</i>
4	0.2	0.2	8 <i>x</i>

a) rate
$$k = [A]^2 [B]$$

b) rate
$$k = [A][B]^2$$

c) rate
$$k = [A][B]$$

d) rate
$$k = [A]^{1/2} [B]^{3/2}$$

16. Assertion: rate of reaction doubles when the concentration of the reactant is doubles if it is a first order reaction.

Reason: rate constant also doubles

- a) Both assertion and reason are true and reason is the correct explanation of assertion.
- b) Both assertion and reason are true but reason is not the correct explanation of assertion.
- c) Assertion is true but reason is false. d) Both assertion and reason are false.
- 17. The rate constant of a reaction is 5.8×10^{-2} S⁻¹. The order of the reaction is
 - a) First order
- b) zero order
- c) Second order
- d) Third order

18. For the reaction $N_2 O_5(g) \longrightarrow 2NO_2(g) + 1/2O_2(g)$, the value of rate of disappearance of N2O5 is given as 6.5×10^{-2} mol L $^{-1}$ s $^{-1}$. The rate of formation of NO2 and O2 is given respectively as

- a) $(3.25 \times 10^{-2} \text{ mol L}^{-1}\text{s}^{-1})$ and $(1.3 \times 10^{-2} \text{ mol L}^{-1}\text{s}^{-1})$
- b) $(1.3 \times 10^{-2} \text{ mol L}^{-1}\text{s}^{-1})$ and $(3.25 \times 10^{-2} \text{ mol L}^{-1}\text{s}^{-1})$
- c) $(1.3 \times 10^{-1} \text{ mol L}^{-1}\text{s}^{-1})$ and $(3.25 \times 10^{-2} \text{ mol L}^{-1}\text{s}^{-1})$
- d) None of these
- 19. During the decomposition of H2O2 to give dioxygen, 48 g O2 is formed per minute at certain point of time. The rate of formation of water at this point is
 - a) $0.75 \text{ mol min}^{-1}$
- b) 1.5 mol min⁻¹ c) 2.25 mol min⁻¹
- d) 3.0 mol min^{-1}
- 19. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is
 - a) Zero
- b) one
- c) Fraction
- d) none
- 20.In a homogeneous reaction A \longrightarrow B+ C + D, the initial pressure was P0 and after time t it was P. expression for rate constant in terms of P0, P and t will be
 - a) $k = [2.303/t] \log\{2P_0/(3P_0-P)\}$
 - b) $k = [2.303/t] \log\{2P_0/(P_0-P)\}$
 - c) $k = [2.303/t] \log\{ (3P_0 P)/2P_0 \}$
 - d) $k = [2.303/t] \log\{2P_0/(3P_0-P)\}$
- 21.If 75% of a first order reaction was completed in 60 minutes , 50% of the same reaction under the same conditions would be completed in
 - a) 20 minutes minutes
- b) 30 minutes
- c) 35 minutes
- d) 75
- 22. The half life period of a radioactive element is 140 days. After 560 days, 1 g of element will be reduced to
 - a) 1/2 g
- b) 1/4 g
- c) 1/8 g

- d) 1/16 g
- 23. The correct difference between first and second order reactions is that (NEET)

- a) A first order reaction can be catalysed; a second order reaction cannot be catalysed.
 - b) The half life of a first order reaction does not depend on $[A_0]$; the half life of a second order reaction does depend on $[A_0]$.
 - c) The rate of a first order reaction does not depend on reactant concentrations; the rate of a second order reaction does depend on reactant concentrations.
 - d) The rate of a first order reaction does depend on reactant concentrations; the rate of a second order reaction does not depend on reactant concentrations.
- 24. After 2 hours, a radioactive substance becomes (1/16) th of original amount Then the half life (in min) is
 - a) 60 minutes
- b) 120 minutes *c)* 30 *minutes*
- d) 15 minutes

