KENDRIYA VIDYALAYA SANGATHAN "HALF YEARLY EXAMINATION 2019-20

SUBJECT: CHEMISTRY (043)

Class: XI

FIRST SHIFT

Duration: 3 Hours

Maximum marks: 70

General Instruction:

1. All Questions are compulsory. There are 37 questions in all.

Choose and write the correct option(s) in the following questions:

- 2. This question paper has four sections: Section A, Section B, Section C and Section D.
- Section A contains 20 questions of one mark, Section B contains 7 questions of two marks, Section C
 Contains 7 questions of three marks, Section D contains three questions of five marks.
- 4. There is no overall choice. However internal choice has been provided in some questions. You have to attempt only one of choices in all such questions.
- 5. Use of calculator is not permitted. You may ask for logarithmic table, if required.

Section A

1	Which of the following statements about a compound is incorrect?	\$ 1
	a) A molecule of a compound has atoms of different elements.	Prefeto
	b) A compound cannot be separated into its constituent elements by physical methods of separation.	high as to charles in the first
	c) A compound retains the physical properties of its constituent elements.	i enteritationissis ervis
	d) The ratio of atoms of different elements in a compound is fixed.	of the Manhaman of the Manhama
2	Which one of the following has the largest number of atoms?	1
	a) 1 g Au(s)	electronic (group of the control of
	b) 1 g Na(s)	All settings continued to

- Pairing of electrons in the orbitals belonging to the same subshell (p,d or f) does not take place until each orbital belonging to that subshell is singly occupied. This is called:
 - a) Hund's rule of maximum multiplicity.
 - b) Pauli's exclusion principle.
 - c) Aufbau principle

c) 1 g Li(s)

d) 1 g of Cl2(s)

d) None of the above.

4 OLIERAICTEV_XI -2019-20- (1)

4	Which important property did Mendeleev use to classify the elements in his periodic table?	Mary Table 2 region
- Control Control	a) Atomic Weight	system/sacrated
Digital or religion maked	b) Atomic Number	Chelpotrol() ()
	c) Melting Point	n jepšekajija jego
90	d) None of these	ellments en stronger
5	If the bond distance in chlorine molecule (Cl ₂) is 198 pm, then the radius of chlorine is:	And the course parameter
	a) 198 pm	demonstration
-confidence	b) 99 pm	-reading to the
100	c) 49.5 pm	#
Por a const discussion	d) 24.75 pm	Market of the same
6	The shape of a molecule depends on	- Control of the cont
-	a) Number of bonded valence electron pairs	Profession and particular
djundan in the	b) Number of non-bonded valence electron pairs	year or things
Military (Marillan)	c) All the electrons.	Anna Septiment
- department of the second	d) 'a' and 'b' above	edicamen app
7	The type of attractive forces operating between the polar molecules having permanent dipole and the	
	molecules lacking permanent dipole is:	ricello elleris
1	a) dipole-dipole	Josephile 10
1	b) London forces) distribution of the control of the
	c) dipole-induced dipole	COLUMN TO EXPENSE
To all the state of the state o	d) H-bonding	New Considerate
8	Which of the following statements is correct?	The state of the s
	a) Evaporation occurs only at the surface.	sangta c depare
	b) Evaporation takes place at all temperatures.	man dilipropiese
	c) Both 'a' and 'b' are correct.	-
	d) None of the above	- Seat - Seat - 1880
9	Thermodynamics is not concerned about:	northweit and
	a) Energy changes involved in a chemical reaction.	and the other parts
	b) The extent to which a chemical reaction proceeds.	representation of the
	c) The rate at which a reaction proceeds.	10 1980 critical
	d) The feasibility of a chemical reaction.	- Principal and Address
10	Which of the following reactions is correct regarding homogeneous equilibria?	
	a) $N_2(g)+3H_2(g)=2NH_3(g)$	on in gradual parties.
	b) CH ₃ COOC ₂ H ₅ (aq)+H ₂ O(I)=CH ₃ COOH(aq)+C ₂ H ₅ OH(aq)	national contraction
	c) Fe ³⁺ (aq)+SCN (aq)=[Fe(SCN)] ²⁺ (aq)	distribution of
	d) All of the above	and the state of t
n the f	ollowing questions, a statement of assertion followed by a statement of reason is given. Choose the correct	-
	out of the following choices:	
(a)	Assertion and reason both are correct statements and reason is correct explanation for assertion.	
(0)	Assertion and reason both are correct statements but reason is not correct explanations for assertion Assertion is correct but reason is wrong statement.	

KVS-H.Y.EXAM-CHEMISTRY-XI-2019-20- (2)

	And the state of t	
11	Assertion: Heisenberg's uncertainty principle cannot be applied to a stationary electron. Reason: Position can be measured accurately if velocity is zero	The second second
12	Assertion: Elements in the same group have similar physical and chemical properties.	
and the second	Reason: Total number of electrons are same in the elements of same group.	halaning edgage
Fill in	the blanks:	er metaucyt speking
13	C ₂ H ₄ has sigma bonds and pi bonds.	The Control of the Co
14	ΔG for a spontaneous process should havevalue.	
15	When Qc=Kc the reaction is in	
Answe	er the following questions in one word or in one sentence	nancia realibraria
16	Calculate the percentage of N in NH ₃ molecule.	-
	OR	West of Marie States
	Calculate the number of gram molecules of water in a beaker containing 576g of water.	N 100 av Vijas ster.
17	Which of the following are isoelectronic species: Na ⁺ , K ⁺ , Mg ²⁺ , Ca ²⁺ , S ²⁻ , Ar	
	OR	Production (1.)
	How many electrons in an atom may have n=3 l=0?	
18	Which hybrid orbitals are used by carbon atoms in CH ₃ CHO?	
	OR	Section of the sectio
	Is there any change in the hybridization of B and N atoms as a result of the following reaction? $BF_3 + NH_3 \rightarrow F_3B.NH_3$	
19	The shape and hybridization of PCI5 molecule is	-
		1
	(a) octahedral, d2sp3 (b) Trigonal bipyramidal, sp3d (c) Trigonal planar sp3d, (d) square planar dsp2	
20	The molar enthalpy of vaporization of acetone is less than that of water. Why?	1
	SECTION - B	- section of
21	A solution is prepared by adding 6g of a substance A to 24g of water. Calculate the mass percent of the solute.	2
22	Define molarity and molality.	2
23	What is the number of photons of light with a wavelength of 4000pm that provide 1J of energy	2
	(h=6.626X10 ⁻³⁴ Js)	A CONTRACTOR OF STREET
	OR	4
	The mass of an electron is 9.1x10 ⁻³¹ kg. If its K.E. is 3x10 ⁻²⁵ J then calculate its wavelength.	
24	Explain why cations are smaller and anions are larger in radii than their parent atoms?	2
	OR	and the second second
	Write the symbol and name according to the IUPAC system for the element with atomic number 120 and 142	
25	Derive the relationship between P, V, n, R and T	2
26	(a) For the reaction $2Cl(g) \rightarrow Cl_2(g)$. What will be the sign of ΔH and ΔS ?	2
	(b) What happens to work when gas is compressed?	
	ser services and services are services and services are s	

KVS-H.Y.EXAM-CHEMISTRY-XI-2019-20- (3)

27	Arrange the follow	ring in increasing acid strength:		
	(a) HI, HBr, HCl, H	:		W Andrews
	(b) HF, H ₂ O, NH ₃ ,	CH₄		Bettyria above, adoption
	and the state of t		OR	rrier specifyldig
	The equilibrium co	nstant expression for a gas react	on is :	In the Little will be a second or the little will be a second
	$[NH_3]^4[O_2]$;		
	$K_c = \frac{[NH_3]^4 [O_2]}{[NO]^4 [H_2 O]}$	5		
	Write the balance	I chemical equation corresponding	g to this expression.	and the second property of the second
		SECT	ION - C	
28	Fill in the blanks i	the following conversions		йон авбаневнаем сы
	(a) 1 km =	mm		ethic appropriate the plane
	(b) 1mg =	kg		ski ger una Staren, vasado
	(c) 1 ml =	L		THE TANK AND THE
			OR	
	Match the followi	ng prefixes with their multiples:		A SE P COLLEGE
	Prefixes	Multiples		TE (MAY) + 14 0 manusi (M
	(a) micro	10 ⁶		AN Province of the Management
	(a) nano	10 ⁻⁶		THE THE REST COLUMN TO SERVICE AND ADDRESS OF A SERVICE AND ADDRESS OF
	(a) mega	10 ⁻⁹		Water of the Chambles
29	State:			Portion of the Control of the Contro
	(a) Aufbau princip	e		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
	(b) Pauli's exclusion	n principle		
		ncertainty principle		egyd ym a dymaeth a gynn a gyn
30	*	tions, describe the orbital with th	e following quantum numbers:	To the same of the
	(a) n=2 l=1	(d) n=3 l=1	o removing quantum numbers.	A PROMOTE COMPANIES COMPAN
	(b) n=4 l=0	(e) n=5 l=3		
	(c) n=5 l=2	(f) n=6 l=0		1 M (100 (1) + 1,0
		(,, ·	OR	on which the state of the state
	Write the electronic configuration of the following elements in s, p, d, f notation:			
	(a) 21Sc		,	vandryttyk - givakry
	(b) ₂₄ Cr			riberthroppyrotests
	(c) ₂₉ Cu			replacement

31	Assign the position of the elements having outer electronic configuration:	1
	(a) $ns^2 np^3$ for $n=2$	and was principle of the
	(b) $(n-1)d^3 ns^2$ for $n=4$	
	(c) $(n-2)f^{7}(n-1)d^{1} ns^{2}$ for $n=6$	
	In the periodic table.	improved accordance
	OR	AND PROPERTY OF STREET
	Explain the following:	CT CT CT (Swind) (Stationary)
	(a) The increasing order of reactivity among group I-elements is Li <na<k<rb<cs< th=""><th>Aller Company or Compa</th></na<k<rb<cs<>	Aller Company or Compa
	(b) electron gain enthalpy of Cl is more than that of F	O CONTRACTOR OF THE PROPERTY O
	(c) Decreasing order of ionic radii F-Na+>Mg ²⁺	that entitle discipline on
32	Discuss the shape of the following molecules using VSEPR model:	3
	BeCl ₂ , BCl ₃ , NH ₃	
33	Give the corresponding conjugate acid and conjugate base of the following species:	3
	(a) H₂O	and the supplemental states are supplemental states are supplemental states and the supplemental states are supple
	(b) HCO ₃ -	Miller - Strate County Strategy As
	(c) NH ₃	otion vertices and the first
34	$N_2(g)+O_2(g) \Rightarrow 2NO(g)$	3
	At equilibrium the concentration of $N_2 = 3.0 \times 10^{-3} M$, $O_2 = 4.2 \times 10^{-3} M$ and $NO = 2.8 \times 10^{-3} M$ in a sealed vessel at	And the second s
	800K. What will be K _c for the above reaction condition?	STATE OF CONTRACT AND CONTRACT
35	Section D	
33	Q35- (i) compare the relative stability of following species by calculating bond order and indicate their	5
	magnetic properties	
	$O_2, O_2^{2-}, N_2 N_2^{-}$	
	O_2, O_2 , N_2 N_2 .	
	(ii) write any two point of difference between sigma and pi bond	
,	OR	
	(i) Write the significance of a plus and a minus sign shown in representing the orbitals.	
	(ii) Describe the hybridisation in case of PCI. Why are the axial bonds longer as compared to equatorial bonds?	

(b) Calculate the enthalpy change for the reaction:

$$C_2H_4(g) + H_2(g) \rightarrow C_2H_6(g)$$

Using the following combustion data:

(i)
$$C_2H_4(g) + 3O_2(g) \rightarrow 2CO_2(g) + 2H_2O(l)$$
 $\Delta H^{\bullet} = -1401 \text{ KJmol}^{-1}$

(ii)
$$C_2H_6(g) + \frac{7}{2}O_2(g) \rightarrow 2CO_2(g) + 3H_2O(l)$$
 $\Delta H^{\circ} = -1550 \text{ KJmol}^{-1}$

(iii)
$$H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(l)$$

 $\Delta H^{\circ} = -286.0 \text{ KJmol}^{-1}$

OR

(a) Predict in which of the following entropy increases/decreases

(i)
$$H_2(g) \rightarrow 2H(g)$$

(ii) A liquid crystalizes into a solid

(b) Calculate the standard Gibbs energy change for the formation of propane at 298K

$$3C(graphite) + 4H_2(g) \rightarrow C_3H_8(g)$$

Δ_tH[®] for propane, C₃H₈(g) is -103.8 KJmol⁻¹

Given $\Delta_r S^0 = -269.7 \text{ JK}^{-1} \text{mol}^{-1}$