# **GGSIPU chamistry 2014**

The molecular ion X F-2has three pairs of non-bonding electrons around the central atom. The 1.

bond angle F-X-F will be closest to

a 180 <sup>°</sup> b 120 <sup>°</sup> c 109 <sup>°</sup> d 90 <sup>°</sup>

2.Which of the following sets have correctly matched each molecule or ion and its geometry?

	Tetrahedral	Triogonal Pyramidal	T-shaped	Square planar
a	CH₄	BCŀ	NO3	S04
b	SO2-4	NF3	ICI3	XeF4
С	CH₄	NO-	GaL3	SnCL4
d	CCL4	PF3	ICI3	SF4

3.Ethanol is CH3CH2OH. Which species is formed whenethanol acts as a Bronstead base?

a CH <sub>3</sub>CH<sub>2</sub>Ob CH <sub>3</sub>CH<sub>2</sub> c CH <sub>3</sub>CH<sub>2</sub>OH+<sub>2</sub> d H O+3

4.Which of the following salts has the greatest molar solubility in pure water?

a CaCO 3	Ksp= 8.7x10 <sup>-9</sup>	
b CuS	K sp= 8.5x10 <sup>45</sup>	
c Ag 2CO3	K <sub>sp</sub> = 6.2x10-12	
d Pb 9I0 <sup>3</sup>	Ksp= <b>2.6x10<sup>-13</sup></b>	

5. The number of valence-shell bonding electron-dot model for HNNN is

a6 b10 c 11 d 16

6.Which of the following pairs contains isoelectronicspecies?

a Be and Li $^+$	bP +and S-
c N2-and Ne	d O2-and Na+

7. Which of the following sets has the atoms and/or ions in correct order of increasing size?

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a Ne<F-<O2-
b Br -<CL-<F-
c Na+<Mg2+<AL3+
d P<S<CL
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8.For which of the following equations is the change in enthalpy at 250C and 1 atm equal toDHofof CH20l

a Cg + H2	g + 1/20	2g	CHQI
∬200s + H	²g + 1	2g -	→ CH₂OI
Og	2g +	Cł	ĮQI
	2 <b>g</b>	CH <del>2</del> OI	

9.CL 20 is a yellowish-red gas at room temperature. The strongest intermolecular forces present in

CL20 are

a dipole -dipole forces b London forces c hydrogen bonds d covalent bonds

10.An ammonia solution has a density of 0.910 g cm-3and is 25.0% NH3by mass. What is the molarity of the solution?

a 12.1 M b 13.4 M c 14.5 M d 15.5 M

11.A compound X2O3contains 31.58% oxygen by weight. The atomic weight of X is

a 34.66 g/mol	b 45.01 g/mol	
c 52.00 g/mol	d 104.0 g/mol	

12.What is the concentration of a solution prepared by dissolving 4.20 of NaF in 500 g of water?

a 0.200-molal	b	0.200-molar
c 0.00840-molal	d 0	.00840-molar

13.In the van der Walls, equation given below, [p+an/V2]V-nb = nRT, the an/V 2and-nb terms represent, respectively, corrections for

a derivations in the pressure and the temperature b intermolecular attractive forces and molecular volumes c intermolecular attractive forces and inelastic collisions d intermolecular repulsive forces and high temperature

14. Find the boiling point of a solution of 5.00 g of naphthaleneC10H8 in 100 g of benzene. Kbof benzene if 2.530C/m; the normal boiling point of benzene = 800C.

a	81 OC	b 85	0C
С	0.99 OC	d 79	0C

15. Magnessium fluoride is a slightly soluble salt whose solubility product constant is K sp= 3.7x10<sup>8</sup>. Whatis the approximate solubility of magnesium fluoride?

a 9.2x10-9M	b 1.2x10-8M	
c 1.4x10-4M	d 2.1x10-3M	

16. Thedistribution coefficient, KDfor an organic compound between water and methylene chloride is 3.40. An aqueous solution of the organic compound contains 0.500 g per 100 mL and is extracted with 50.0 mL of methylene chloride. What percentage of the organic compound originally in water is extracted?

a 31.5%	b 63.0%	
c 72.0%	d 92.6%	

17. The permanganate ion is an excellence oxidisting agent in aqueous solutions. When the half reaction,  $MnO-\frac{1}{4}H++e^- \rightarrow MnO2+H2O$  is balanced, the correct coefficients for the species involved are

a 1,4,4,1,2	b 1,4,2,1,2	
b 1,4,3,1,2	d 1,4,1,1,2	

18. For a certain reaction the rate law is rate = k[C]3/2. If the rate of the reaction is 0.020 mol L-1s-1 when [C] = 1.0 M, what is the rate when [C] = 0.60 M?

a 0.0093 mol L-1s-1	b 0.012 mol L-1s-1
b 0.033 mol L-1s-1	d 0.040 mol L-1s-1

19. Which atom has the correct ground state electron configuration?

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a Cl: [Ne]3s13p6 b Mo : [Kr]5s14d5
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c Cu : [Ar]4s	23d6	d	As:[Ar	]4s24d104p3
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20. What is the volume, in liters, of 576 g of SO2gas at STP?

a 101	b 202	
c 216	d 788	

21. A 2.0 molal sugar solution has approximately the same freezing point as a, 1.0 molalsolution of

a CaCL2	b CH2COOH	
c C2H5OH	d NaCL	

22. Cellulose, protein and starch are classified as

a natural polymers	b aldehydes
c esters	d synthetic polymers

## 23. An example of a secondary alcohol is

a1 -	propanol		b	2	-propanol
c 1,2	-propanol	=	d :	1,2	,3 propanol

- 24. The IUPAC name of compound CH<sub>2</sub> CH(CH32is
  - a 1,1-dimethyl-2-propane
  - b 2 -vinyl propane
  - c 3-methyl-1-butene
  - d 2-vinyl propane
- 25. The number of sigma and pi-bonds in 1-butene 3-yne are
  - a 6 sigma and 4 pi b 7 sigma and 3 pi
  - c 5 sigma and 5 pi d None of these
- 26. Geometrically isomerism is reflected by which of the compound ?
  - a 3 -phenyl-1-butene
  - b 2 -phenyl-1-butene
  - c 1,1 -diphenyl-1-propane

#### d 1-phenyl-2-butene

27. Which of the compound does not dissolve in concentrated H2SO4?

a Hexane		b Benzene	
c Ethylene 2	8. Given t	the d Aniline	
Kspexpression.		⇔ <b>sip= [A][B]</b> ³	
	a ABs₂	⇔3A3+aq + 2I	32-aq
	<b>DA</b> 3s	⇔ <b>3A</b> aq + 3B	²-aq
	c A3B2s	<b>ं3A</b> aq + 2B	<sup>2-</sup> aq
	d ABş	2 2A3+aq +	3B2-aq

29. Black precipitate from in many metal ion solutions when which anion is used as a precipitating agent?

a Cl<sup>-</sup> b S<sup>2-</sup> c PO3- 4 d CO2- 3

30. What is the oxidation number of Pt in K[PtNH3Cl5]?

a0 b+1 c+2 d+4

31. Which substance has the lowest boiling point?

a CH3CH2CH2CH2OCH3

b CH3CH2OCH2CH3

c CH3CH2CHCH 3

d CH <sub>3</sub>CH2C OCH3

32. Elemental analysis results obtained for cortisone, an anti-inflammatory agent, are 69.98% C, 7.83% H and 22.19% O.What is the empirical formulaof cortisone?

a C4H60 b C18H22O3

c C20H25O4 d C12H28O5

33. Which pairs of compounds will form the strongesthydrogen bonds with each other?

#### a C2H5OH and CH3OCH3

#### b HOCH2CH2OH and H2O

## c HOCH2CH2OH and CH3OH

#### d CH3OCH3and H2O

## 34. Which of the following acids dissociates to the greatest extent in a aqueous solution?

a Tricloroacetic acid	b Acetic acid
c Chloroacetic acid	d Dichloracetic acid
35. Whatis one of the products of the a	addition of HBr to 2 butene?

a 1-bromobutene	b 2-bromobutene
c 1,2-dibromobutene	d 2,3-dibromobutene

36. The anti-cancer drug cis-platin hasthe formula PtNH32CL2. There is another isomer, trans-platin, that is not medically active. What is the shape of cis-platin?

a Tetrahedral	b Octahedral
c square planar	d Trigonal bipyramidal

37. Aluminium hydroxide, AlOH)3, is insoluble in water, but dissolves readily in both acidic and basic solutions. Such behavior is characteristic of

a polyprotic behavior	b hydrophilic behavior
c a buffer	d amphoteric behavior

38. How many of the following salts will be more solublein acid solution than in pure water? CdCO3, MnOH)2, PbS,PbCl2

a1 b2 c3 d4

39. Which of t6he following substances has the highest melting point?

a CaO b BiCl <sub>3</sub> c KCL d CLO <sub>2</sub>

40. Which of the following oxides, at the same concentration when dissolved in water, results in the most acidic solutions?

a CO2 b B2O3 c N2O5 d Li2O2 41. What is the groundstate electron configuration of the Mn2+ion?

a [Ar]4s 13d5 b [Ar]4s 23d3 c [Ar]3d  $^{5}$  d [Ar]3d  $^{4}$ 

42. In spontaneous beta paticle b- emission, what is the source of theemitted electron?

a The nucleus b The 1s orbital c The outermost occupied orbital d A random orbital

43. Very strong acids, such as HNO3andHCL, appear to be equally strong in water. This "leaving effect" of bwater because

a OH-is a stronger base than the conjugate bases of HNO3and HCL

b H 0+3 is a stronger acid than HNO3 and HCL

c H2O is a stronger base than the conjugate bases of HNO3and HCL

d H2O is a weaker base than the conjugate bases of HNO3and HCL

44. Which factors do not effect the vapour pressure of a liquid at equilibrium ?

I. Intermolecular forces of attraction

II. The volume of liquid present

III. The temperature of the liquid.

- a Only I b Only II
- c I and II d II and III

45. The half-life of 14C is 5570 yr. How many years will it take for 90% of a sample to decompose?

a 5.570 yr b 17,700 yr

c 18,600 yr d 50,100 yr

46. Which atom is the smallest?

a	Rb	b Ag
c !	Sb	d I

47. Which of the anhydride of nitric acid?

a NO b NO 2 c N2O3 d N2O5

48. What type of compound is shown in below?

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H	//	C–	CH	2–C	H3
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a An alcohol b An aldehyde	a	An alcohol	b An aldehyde
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c A ketone d None of these

49. Hydrogen bonding is maximum in

a diethyl ether	b triethyl amine

c ethanol d None of these

50.Benzyl chloride C6H5CH2CL can be prepared from toluene by chlorination with

a CL2	b SO2CL2
c SOCL2	d NaOCL