

## **CBSE Class 12 Chemistry Question Paper Solution 2019**

## Marking scheme – 2019

## CHEMISTRY (043)/ CLASS XII

## 56/1/1

Q.No	Value Points	Marks
	SECTION A	
1	AgCl , Due to large difference in their size/ Due to small size of Ag <sup>+</sup> ion.	1/2 , 1/2
2	$(CH_3)_3N < C_2H_5NH_2 < C_2H_5OH$	1
3	Due to large surface area these are easily assimilated or adsorbed.	1
	OR	
3	Emulsion – both dispersed phase and dispersion medium are liquid  Gel- Dispersed phase is liquid while dispersion medium is solid	1
4	Nucleophiles having two nucleophilic centres. CN <sup>-</sup> /SCN <sup>-</sup> / NO <sub>2</sub> <sup>-</sup> (any one)	1/2 , 1/2
5	Glucose has aldehydic group while fructose has ketonic group/ Glucose is aldose while fructose is ketose.	1
	OR	
5	Glucose and Galactose	1
	SECTION B	
6	i) $2XeF_2$ (s) + $2H_2O(1) \rightarrow 2Xe$ (g) + 4 HF(aq) + $O_2(g)$	1
	$ \begin{array}{c} \text{ij)}  \text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O} \end{array} $	1
	OR	1
6	i) H <sub>2</sub> O < H <sub>2</sub> S < H <sub>2</sub> Se < H <sub>2</sub> Te	1
	ii) HF> HCl > HBr > HI	1
7	For a solution of volatile liquids, the partial vapour pressure of each component of the solution is directly proportional to its mole fraction present in solution.	1
	(i) $\Delta_{\text{max}}H = 0$ . (ii) $\Delta_{\text{max}}V = 0$ (iii) The components have nearly same intermolecular force of attraction (any two)	1/2, 1/2
8	i) Rate = $k [H_2O_2] [1]$	1
	ii) order = 2	1/2
	iii) Step 1	1/2
9	$A = K_2MnO_4 / MnO_4^2$ , $B = KMnO_4 / MnO_4$ , $C = IO_3$ or $KIO_3$ , $D = I_2$	½ ×4
10.	Bis(ethan-1,2-diamine)dichloridoplatinum (II)	1
	en Pt en Cl en	1/2 , 1/2
	Cis	
	OR	
10.	i) [Co(NH <sub>3</sub> ) <sub>6</sub> ] <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	1
	ii)K <sub>3</sub> [Cr(ox) <sub>3</sub> ]	1
11	i) [CoF <sub>6</sub> ] <sup>3-</sup> ii)[Co(en) <sub>3</sub> ] <sup>3+</sup> iii) [Co(en) <sub>3</sub> ] <sup>3+</sup> iv) [CoF <sub>6</sub> ] <sup>3-</sup>	½ ×4

		- Andrewson Control
12	COOK	½ ×4
	i) A= B=	
	=N-NH - Č-NH,	
	ii) A= B= SECTION C	
13	$t = \frac{[R]0 - [R]t}{.}$	*
13	$t = \frac{c}{k}$	1
		1677.000
	$=\frac{[0.1-0.064]}{4X\ 10^{-3}}$	1
	4X 10 <sup>-3</sup>	
	= 9 s	1
14	i) Adsorption of toxic gases	1
140	ii) Negative charge ; Fe <sub>2</sub> O <sub>3</sub> .xH <sub>2</sub> O/OH-	1/2,1/2
	iii) Increases with increase in temperature/ First increases then decreases	1
15	$d = \frac{zm}{a^3 N}$ ; m=Mass of element, N=number of atoms	1
	$N = \frac{108 \times 4}{10.8 \times 27 \times 10^{-24}}$	No.
	10.8X27X10 <sup>-24</sup>	1
	24	
	= 1.48 X 10 <sup>24</sup> atoms	1
	Or	
	$M = \frac{a^3 \times N_a \times d}{7}$	1/2
	$ 27 \times 10^{-24} \times 6.022 \times 10^{23} \times 10.8 $	1
	4	175
	= 43.88 g mol <sup>-1</sup>	1/2
	$43.88 \text{ g mol}^{-1} \text{ contains } 6.02 \times 10^{23} \text{ atoms}$	
	So, 108 g contains = $\frac{6.02 \times 10^{23} \times 108}{43.99}$ = 1.48 × 10 <sup>24</sup> atoms	1
16	43.88	1/2
10	$\Delta T_f = K_f m$	/2
	$K_f = \Delta T_f \times \underline{M_2 \times w_1}$ $w_2 \times 1000$	
	$= \frac{2 \times 342 \times 96}{4 \times 1000}$	
	= 16.4 K	1
		1
	$\Delta T_f = K_f m'$	
	$= K_f \underline{w_2} \times 1000$	
	$M_2 \times W_1$	
	$= 16.4 \times 5 \times 1000$ 95×180	
	= 4.8 K	1
	$\Delta T_f = T_f^0 - T_f$	
	4.8 = 273.15 - T <sub>f</sub>	1/2
	$T_f = 268.35 \text{ K}$	1



	Ť	)
17	a) i)Zone refining ii)Distillation	1/2 , 1/2
	b) $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$	1
	$2Cu_2O + Cu_2S \rightarrow 6Cu + SO_2$	1
18	i) Due to variable oxidation state	1
	ii)Mn <sup>2+</sup> is stable due to exactly half filled 3d <sup>5</sup> configuration/ Due to high ΔaH <sup>0</sup> and low ΔhydH <sup>0</sup> for	
	Cu <sup>2+</sup> / Cu is positive.	1
	iii) Due to comparable energies of 5f , 6d and 7s orbitals.	1
19.	i) HOOC(CH <sub>2</sub> ) <sub>4</sub> COOH , H <sub>2</sub> N (CH <sub>2</sub> ) <sub>6</sub> NH <sub>2</sub>	1 ×3
	НО	
	8	
	ii) HO-CH <sub>2</sub> -CH <sub>2</sub> -OH .	-
	ii) HO-CH <sub>2</sub> -CH <sub>2</sub> -OH , CH = CH <sub>2</sub>	
	iii) CH <sub>2</sub> = CH - CH = CH <sub>2</sub>	
	OR	
19	i) Homopolymers , single repeating unit	1/2,1/2
	H <sub>2</sub> N N NH <sub>2</sub> N N	
	N N	1
	WI HOUSE	-
	ii) , (Or names of monomers) iii) Sulphur forms cross links at the reactive sites of double bonds and thus the rubber gets	1
	stiffened / To improve the physical properties of rubber by forming cross links.	
20.	i) Tranquilizers	1
	ii) Anionic detergents	1
	iii) It is difficult to control the sweetness.	1
20.	i) Antibiotics which kill or inhibit a wide range of Gram-positive and Gram-negative bacteria.	1/2 , 1/2
20.	Example- Chloramphenicol (or any other)	/2 , /2
	ii) The chemicals which either kill or prevent the growth of microorganisms when applied to	1/2, 1/2
	inanimate objects such as floors, drainage system, instruments, etc.Example – 1% Phenol	7/5
	solution (or any other) iii) Cationic detergents are quarternary ammonium salts of amines with acetates, chlorides or	
	bromides as anions where Cationic part is involved in cleansing action. Example –	1/2,1/2
	Cetyltrimethylammonium bromide (Or any other)	
21	i) (CH <sub>3</sub> ) <sub>3</sub> C-I, Due to large size of iodine / better leaving group / Due to lower electronegativity.	1/2 , 1/2
	;CI:	1
	(b) NaOH, 443K (b) H <sup>th</sup>	
	I I	
	ii) NO <sub>3</sub>	1
22	iii) Because enantiomers have same boiling points / same physical properties.  CONH. NC	½ ×6
LL	CONH <sub>2</sub> NH <sub>2</sub> NC	/2 ^0
	A = , C= , C=	
	A= Benzamide, B= Aniline , C= Phenylisocyanide / Benzeneisonitrile	
23	i) C <sub>6</sub> H <sub>5</sub> -CH(OH)-CN	1
	ii) 2 CH <sub>3</sub> COCH <sub>2</sub> C <sub>6</sub> H <sub>5</sub> + CdCl <sub>2</sub> iii) (CH <sub>3</sub> ) <sub>2</sub> -C(Br)COOH	1
		1



	OR	ľ
23	2CH <sub>3</sub> ·CO-CH <sub>3</sub> Propanone  i)  CH <sub>3</sub>	1
	ii) CH <sub>3</sub> CH <sub>2</sub> CH <sub>3</sub> CH <sub>2</sub> CH <sub>3</sub> CH <sub>2</sub> CH <sub>3</sub>	1
	$\begin{array}{c} & & \\ & \\ \text{iii)} \end{array} \qquad \begin{array}{c} \text{CHO} \\ & \\ \text{Pd-BaSO}_4 \end{array} \qquad \begin{array}{c} \text{CHO} \\ \end{array}$	1
24	i) Amylose is water soluble component while amylopectin is water insoluble ii) Peptide linkage is –CONH- formed between two amino acids while glycosidic linkage is an oxide linkage between two monosaccharides. iii) In fibrous protein ,the polypeptide chains run parallel while in globular , the chains of	1 1 1
	polypeptides coil around to give a spherical shape  (or any other correct difference.)	1
	OR	
24	i) CHO  (CHOH) <sub>4</sub> $HI, \Delta$ $CH_3$ $CH_2$ $CH_2$ $CH_2$ $CH_2$ $CH_3$	1
	(CHOH), Acetic anhydride (CH-O-C-CH <sub>3</sub> ), CH <sub>2</sub> OH  CHO  CHO  CHO  CHO  CHO  CHO  CHO	1
	(CHOH), Br, water (CHOH), iii) CH, OH CH, OH	1
25	SECTION D	
25	$E_{cell} = E^{\circ}_{cell} - \underbrace{0.059}_{n} \log \underline{K_{c}}$ $= E^{\circ}_{cell} - \underbrace{0.059}_{2} \log \underline{10^{-3}}$ $= 10^{-2}$	1
	= $2.71+0.0295$ $E_{cell}$ = $2.7395$ V i)Cu to Mg / Cathode to anode / Same direction	1
	ii)Mg to Cu / Anode to cathode / Opposite direction	1
	OR	
25	(a) $m = z I t$ $2.8 g = \frac{56 \times 2 \times t}{2 \times 96500}$ t = 4825 s / 80.417 min	1/2 1/2 1/2
	$\frac{m1}{m2} = \frac{E1}{E2}$	1/2

28	20		10
m <sub>En</sub> = 3.265 g b) i)A- strong electrolyte , B-Weak electrolyte ii) Λ <sup>0</sup> m for weak electrolytes cannot be obtained by extrapolation while Λ <sup>0</sup> m for strong electrolytes can be obtained as intercept.  26  27  28  29  20  20  20  20  20  20  20  20  20		$\frac{2.8}{m^{7}n} = \frac{56}{2} \times \frac{2}{653}$	1
b) i)A-strong electrolyte, B-Weak electrolyte ii)A <sup>o</sup> m for weak electrolytes cannot be obtained by extrapolation while A <sup>o</sup> m for strong electrolytes can be obtained as intercept.  26  OH  ON  ON  OCH:  II  II  II  H  H  H  H  C-C-O-H  H  H  H  C-C-O-H  H  H  H  C-C-C-O-H  H  H  H  H  C-C-C-O-H  H  H  H  H  C-C-C-O-H  H  H  C-C-C-O-H  H  H  C-C-C-O-H  H  H  H  C-C-C-H  N  N  N  N  N  N  N  N  N  N  N  N  N		CALCONING PS CANCEL AND AND CANCEL AND AND CANCEL AND	4
ii) \( \text{iii} \) \( \text{or m} \) for weak electrolytes cannot be obtained by extrapolation while \( \text{or m} \) for strong electrolytes can be obtained as intercept.  26  \[ \text{OH} \) \( \text{OH} \) \( \text{CH} \) \(		The second secon	
strong electrolytes can be obtained as intercept.  26  OH  ONA  OCH3  (Or any other correct method)  H  H  H  H  H  H  H  H  H  H  H  H  H			1
26  OH  ONA  ONA  O-CH3  II) CH3CH2OH  PCCHeat  CH3-CHO  IICH3Mg8 II)H  CH3-CH(OH)-CH3  (or any other correct method)  H  H  H  H  H  H  H  H  H  H  H  H  H			
ONA  CH3. X  a) i) ii) CH3.CH3.OH  CH3.CH0  CH3.CH0  CH3.CH(OH)-CH3  (or any other correct method)  H H H H H C, C, C, O, H H H H H C, C, C, O, H H H H H C, Due to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26  a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH3O' being a strong base favours elimination reaction.  OH  CH3.CH0H)-CH3  Y H H H H C, Due to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26  a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH3O' being a strong base favours elimination reaction.  OH  CHC, aq NaOH  CH3.CHO  OR  1  1  1  1  1  1  1  1  1  1  1  1  1		strong electrolytes can be obtained as intercept.	
a) i) CH <sub>3</sub> CH <sub>2</sub> OH PCCHeat CH <sub>3</sub> -CHO    CH <sub>3</sub> CH   CH <sub>3</sub>	26	OH O Na O - CH3	81
a) i) CH <sub>3</sub> CH <sub>2</sub> OH, OH PCCHeat CH <sub>3</sub> ·CHO (CH <sub>3</sub> CHOH)-CH <sub>3</sub> (or any other correct method)  H H H H H H H H H H H H H H H H H H H			1
ii) CH <sub>3</sub> CH <sub>2</sub> OH PCC.Heat CH <sub>3</sub> -CHO (CH <sub>3</sub> CH) (or any other correct method)  H H C C C O H H F Fast H C C C O H H H H H H H C C C O H Slow H H H H C C C O H Slow H H H H C C C C H Slow H H H H H C C C C H Slow H C C C C H Slow H C C C C C C C C C C C C C C C C C C		$+ \text{NaOH} \longrightarrow \begin{bmatrix} CH_3 \cdot X \end{bmatrix}$	1
(or any other correct method)  H H H H C C C C C H Slow H C C C H H H H H H H C C C C C H Slow H C C C C H H H H H H H C C D Use to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26 a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding.  ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O being a strong base favours elimination reaction.  OH CHCl, + aq NaOH CHO H CHO D		a) i)	
(or any other correct method)  H H H H H H H H H H H H H H H H H H H		ii) CH <sub>3</sub> CH <sub>2</sub> OH PCC,Heat → CH <sub>3</sub> -CHO i)CH3MgBr ii)H+ → CH <sub>3</sub> CH(OH)-CH <sub>3</sub>	1
b) If H H H H H H H H H H H H H H H H H H		(or any other correct method)	_
b) H H  H H  H CC CC H Slow H C CC + H₂O  H H H  H CC CC C H Slow H C C C + H₂O  H H H  H CC C C C H Slow H C C C + H₂O  H H H  H CC D Let to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26  a) i) o-Nitrophenol is steam volatile due to intermolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH₃O being a strong base favours elimination reaction.  OH  CHCI, + aq NaOH  ii) (Award 1 mark if attempted in any way)  c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) ii) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂. ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR		н н н н н	
b) H H  H H  H CC CC H Slow H C CC + H₂O  H H H  H CC CC C H Slow H C C C + H₂O  H H H  H CC C C C H Slow H C C C + H₂O  H H H  H CC D Let to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26  a) i) o-Nitrophenol is steam volatile due to intermolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH₃O being a strong base favours elimination reaction.  OH  CHCI, + aq NaOH  ii) (Award 1 mark if attempted in any way)  c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) ii) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂. ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR		$H-\dot{C}-\dot{C}-\dot{O}-H+\dot{H}^*$ $\stackrel{\text{rast}}{\longleftarrow}$ $H-\dot{C}-\dot{C}-\dot{O}-H$	1/2
H H H H H H H H H H H H H H H H H H H			
H H H H H H H H H H H H H H H H H H H H			
C) Due to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26 a) i) ο-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while ρ-nitrophenol is less volatile due to intermolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O being a strong base favours elimination reaction.  ONA  OH  CHCI, + aq NaOH  CHCI, + aq NaOH  CHO  H  CHO  H  CHO  A  OH  CHO  D  I  D  D  D  D  D  D  D  D  D  D  D		$H-\dot{C}-\dot{C}-\dot{C}-\dot{C}-\dot{C}+\dot{C}-\dot{C}+\dot{C}-\dot{C}+\dot{C}$	
Part of the color of the colo		н н н	1/2
ChCl, + aq NaOH  c) Add neutral FeCl <sub>3</sub> to both the compounds, phenol will give violet colouration while ethanol does not.  26  a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen. b) i) NO₂ gas / Nitricg ndioxide  OR  27  a) ii NO₂ gas / Nitrogen dioxide  OR  1  chCl, + aq NaOH  chClO  chClo, + aq NaOH		н н н	
Part of Due to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron rich.  OR  26 a) i) α-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while ρ-nitrophenol is less volatile due to intermolecular hydrogen bonding.  ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O being a strong base favours elimination reaction.  OH  CHCI, + aq NaOH  b) i)  ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27 a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO₂ gas / Nitric oxide  ii) NO₂ gas / Nitrogen dioxide  OR		H-C₂ C ← C − C + H+	22
rich.  OR  26 a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O' being a strong base favours elimination reaction.  OH  CHCI, + aq NaOH  CHCI, + aq NaOH  CHO  I  OH  CHO  I  OH  CHO  I  I  OH  CHO  I  I  I  OH  CHO  I  I  I  I  I  I  I  I  I  I  I  I  I		н н н н	1
rich.  OR  26 a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding. ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O' being a strong base favours elimination reaction.  OH  CHCI, + aq NaOH  CHCI, + aq NaOH  CHO  I  OH  CHO  I  OH  CHO  I  I  OH  CHO  I  I  I  OH  CHO  I  I  I  I  I  I  I  I  I  I  I  I  I		c) Due to involvement of lone pair of oxygen in delocalisation makes the benzene ring electron	
a) i) o-Nitrophenol is steam volatile due to intramolecular hydrogen bonding while p-nitrophenol is less volatile due to intermolecular hydrogen bonding.  ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O being a strong base favours elimination reaction.  OH  CHCl <sub>3</sub> + aq NaOH  b) i)  ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl <sub>3</sub> to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitric oxide  ii) NO₂ gas / Nitrogen dioxide  OR			1
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ii) Due to the formation of stable intermediate tertiary carbocation / CH <sub>3</sub> O being a strong base favours elimination reaction.  OH  CHCl <sub>3</sub> + aq NaOH  b) ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl <sub>3</sub> to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) ii) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitrogen dioxide  OR  27  4H₂PO₂ → 3H₂PO₂ + PH₂	26		1
favours elimination reaction.  OH  CHCl, + aq NaOH  b) i)  ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl <sub>3</sub> to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) ii) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR			
b) i) ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27 a) ii) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂. ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR			1
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b) i) ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl <sub>3</sub> to both the compounds, phenol will give violet colouration while ethanol does not.  27 a) i) In vapour state sulphur partly exists as S <sub>2</sub> molecule which has two unpaired electrons like O <sub>2</sub> . ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO <sub>2</sub> gas / Nitrogen dioxide  27 4HoPO <sub>2</sub> → 3HoPO <sub>2</sub> + PH <sub>2</sub>		CHO CHO	
ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27 a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂. ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR		CHCl <sub>3</sub> + aq NaOH	1.
ii) (Award 1 mark if attempted in any way) c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27 a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂. ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR		(b) i)	
c) Add neutral FeCl₃ to both the compounds, phenol will give violet colouration while ethanol does not.  27  a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like O₂.  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitric oxide  ii) NO₂ gas / Nitrogen dioxide  OR			4
a) i) In vapour state sulphur partly exists as S₂ molecule which has two unpaired electrons like  O₂.  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitric oxide  ii) NO₂ gas / Nitrogen dioxide  OR			10000
O <sub>2</sub> .  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitric oxide  ii) NO <sub>2</sub> gas / Nitrogen dioxide  OR			1
O <sub>2</sub> .  ii) Due to greater interelectronic repulsion  iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen.  b) i) NO gas/ Nitric oxide  ii) NO <sub>2</sub> gas / Nitrogen dioxide  OR			
ii) Due to greater interelectronic repulsion iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR  27 4H <sub>2</sub> PO₂ → 3H <sub>2</sub> PO₂ + PH₂	27		1
iii) Because decomposition of ozone into oxygen results in the liberation of heat (ΔH is negative) and an increase in entropy (ΔS is positive), resulting in large negative Gibbs energy change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR  27  4H <sub>2</sub> PO₂ → 3H <sub>2</sub> PO₂ + PH₂		100 200 CV	100
negative) and an increase in entropy (∆S is positive), resulting in large negative Gibbs energy change (∆G) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR  27 4H₀PO₃ → 3H₀PO₃ + PH₃			1
change (ΔG) for its conversion into oxygen. b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR  27 4H₀PO₃ → 3H₀PO₃ + PH₃ 1			4
b) i) NO gas/ Nitric oxide ii) NO₂ gas / Nitrogen dioxide  OR  27 4HaPO₂ → 3HaPO₂ + PH₂			1
ii) NO₂ gas / Nitrogen dioxide  OR  27 4H₂PO₂ → 3H₂PO₂ + PH₂  1			
OR 27 4H <sub>2</sub> PO <sub>2</sub> → 3H <sub>2</sub> PO <sub>4</sub> + PH <sub>2</sub> 1			1.1
27 4H <sub>o</sub> PO <sub>o</sub> → 3H <sub>o</sub> PO <sub>o</sub> + PH <sub>o</sub> 1		OR	1,1
a) I)	27	$4H_0PO_0 \rightarrow 3H_0PO_0 + PH_0$	1
		a) ı)	
			d.





