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Senior School Certificate Examination
2017
Marking Scheme ------- Chemistry

General Instructions

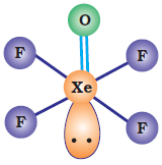
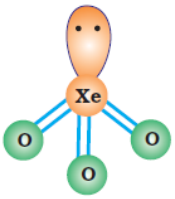
1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. The answers given in the Marking Scheme are Suggested answers. The content is thus indicative. If a student has given any other answer which is different from the one given in the Marking Scheme, but conveys the same meaning, such answers should be given full weight-age.
2. The Marking Scheme carries only suggested value point for the answers. These are only guidelines and do not constitute the complete answers. The students can have their own expression and if the expression is correct the marks will be awarded accordingly.
3. The Head-Examiners have to go through the first five answer-scripts evaluated by each evaluator to ensure that the evaluation has been carried out as per the instruction given in the marking scheme. The remaining answer scripts meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
4. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration – Marking Scheme should be strictly adhered to and religiously followed.
5. If a question has parts, please award marks in the right hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left hand margin and circled.
6. If a question does not have any parts, marks be awarded in the left-hand margin.
7. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.
8. No Marks to be deducted for the cumulative effect of an error. It should be penalized only once.
9. A full scale of marks 0-70 has to be used. Please do not hesitate to award full marks if the answer deserves it.
10. Separate marking schemes for all the three sets have been provided.
11. As per orders of the Hon'ble Supreme Court. The candidate would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All examiner/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.
12. The Examiners should acquaint themselves with the guidelines given in the Guidelines for sport Evaluation before starting the actual evaluation.
13. Every Examiner should stay upto sufficiently reasonable time normally 5-6 hours every day and evaluate 20-25 answer books and should minimum 15-20 minutes to evaluate each answer book.
14. Every Examiner should acquaint himself/herself with the marking schemes of all the sets.

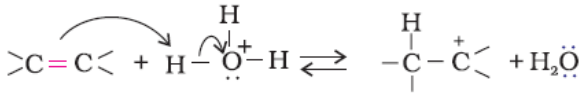
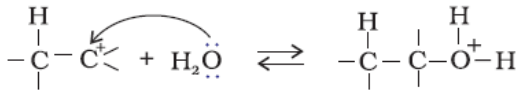
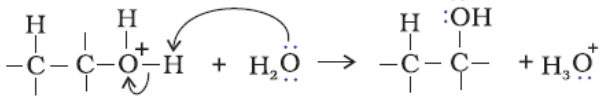
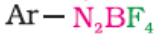
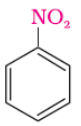
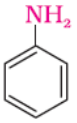
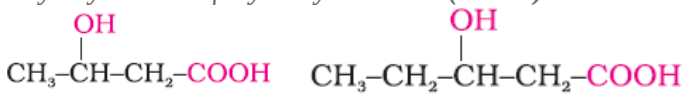
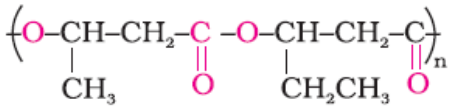
Marking scheme – 2017 (Compartment)

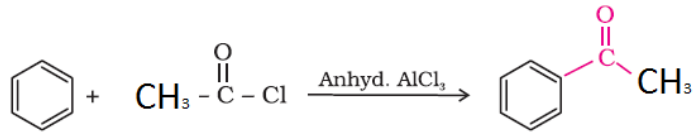
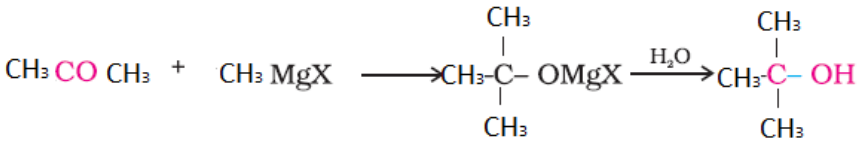
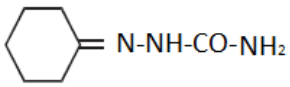
CHEMISTRY (043)/ CLASS XII

Set 56/1/1

Q.No	Value Points	Marks
1	hcp	1
2	$AlCl_3$ / Al^{3+}	1
3	Orbital splitting energies are not sufficiently large for forcing pairing	1
4	2,3-dinitro phenol	1
5	Having no α- hydrogen	1
6	Vapour pressure of the solvent decreases in the presence of non – voilatile solute (glucose) hence boiling point increases	2
7	(i) First order (ii) s^{-1} / time $^{-1}$	1 1
8	Hypophosphorous acid is a good reducing agent as it contains two P-H bonds. There is no P-H bond in orthophosphoric acid , so it is not a reducing agent Example : It reduces $AgNO_3$ to metallic silver/ chemical equation	1 1
	OR	
8	a) 4 b) Due to lower bond dissociation enthalpy of BiH_3 as compared to SbH_3	1 1
9	i. Due to resonance the two O-O bond lengths are identical. ii. Due to strong bond formed by it with other elements.	1 1
10.	i) (b) is chiral ii) (a) will undergo S_N2 reaction faster	1 1
11	In bcc, z=2 ; $d = (zxM) / a^3 x\ N_A$ (i) No. of atoms = $\frac{w}{M} \times N_A$ $2.5 \times 10^{24} = \frac{500\,g}{M} \times N_A$ M= [500 × N_A] / 2.5 × 10^{24} (ii) Putting values of M in equation (i) d= 2 x 500 g × N_A / [2.5 × 10^{24} atoms × $(400 \times 10^{-10}\ cm)^3$ x N_A] d= 6.25 g/ cm^3 (or any other correct method)	½ 1 ½ 1
12	$p_{total} = p_1^o + (p_2^o - p_1^o)\ x_2$ $600 = 450 + (700-450)\ x_2$ $x_2 = 0.6$ $x_2 = 1 - 0.6 = 0.4$	1 1 ½ ½
13	$P_A = 2Po - Pt$ $= (2 \times 0.4) - 0.7 = 0.1$ $k = \frac{2.303}{t} \log Po/P_A$ $k = \frac{2.303}{100} \log 0.4/0.1$ $k = \frac{2.303}{100} \times 0.6021$ $= 1.39 \times 10^{-2}\ s^{-1}$	½ ½ 1 1
14	i) The process of removing an adsorbed substance from a surface on which it is	1

	adsorbed. ii) The formation of micelles takes place only above a particular concentration called CMC. iii) The catalytic reaction that depends upon the pore structure of the catalyst and size of the reactant and product molecules.	 1 1
15	a) The metal is converted into its volatile compound and collected elsewhere. It is then decomposed to get the pure metal. b) i)Ni ii) Ti/Zr c) It is used to separate two sulphide ores by preventing one to form froth.	1 ½ + ½ 1
16	a) $H_2O < H_2S < H_2Se < H_2Te$, because of decrease in bond dissociation enthalpy. b) 	1,1 1
	OR	
	a) i)Due to higher oxidation state of P in PCl_5 ii) Liberation of hydrogen prevents the formation of $FeCl_3$ b) 	1 1 1
17	Hybridisation : sp^3d^2 Magnetic character : Paramagnetic Spin nature: High spin	1 1 1
18.	a) A: CH_3- CH=CH_2 B: CH_3- CH_2-CH_2Br C: CH_3- CH_2-CH_2I D: CH_3- CH_2-CH_2MgI b) 	½ × 4 1
19.	a) CH_3-O-CH_3 + HI ⟶ CH_3-OH + CH_3-I b) .	1

	Protonation of alkene to form carbocation by electrophilic attack of H_3O^+. $H_2O + H^+ \rightarrow H_3O^+$  Nucleophilic attack of water on carbocation.  Deprotonation to form an alcohol. 	½ ½ 1
20.	i) A: CH_3- CH_2CN ; B: CH_3- CH_2- CH_2NH_2 ; C: CH_3- CH_2- CH_2-NH-$COCH_3$ ii) A:  ; B:  C : 	½ ×3 ½ ×3
21	a) Glycosidic linkage b) Source : Meat, Fish, egg, curd (any one) ; Pernicious anaemia c) DNA is double strand while RNA is single strand molecule (or any other correct difference)	1 ½ , ½ 1
22	i) Treatment of hyperacidity Class : Antacids ii) Relieve pain and produce sleep Class: Narcotic analgesics iii) Relieve pain and reduce fever Class: Non- Narcotic analgesics / Analgesics	½ ½ ½ ½ ½ ½
23	a) *Poly β-hydroxybutyrate – co-β-hydroxy valerate / (PHBV)* *Monomers :*  *Repeating unit :*  *b)* PHBV is used in speciality packaging, orthopaedic devices and in controlled release of drugs.(any two) c) Concern for environment , caring (or any other)	½ ½ , ½ ½ ½ , ½ ½ , ½
24	a) E^0 value of silver is lower than that of gold, hence silver displaces gold which gets deposited on the silver object. E^0 value of copper is lower than that of silver, hence silver cannot displace copper from its solution. b) i) Electrons flow from Zn to Ag plate. ii) Zn as anode and Ag acts as cathode iii) Cell will stop functioning iv) Concentration of Zn^{2+} ions will increase and that of Ag^+ ions will decrease. v) No change	1 1 ½ ½ ½ ½, ½ ½
	OR	

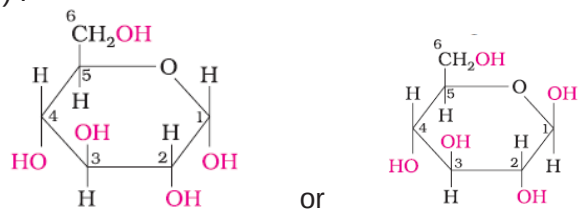
24	a) When concentration approaches zero, the molar conductivity is known as **limiting molar conductivity** The change in Λm with dilution is due to the increase in the degree of dissociation and consequently the number of ions in the total volume of the solution that contains 1 mol of electrolyte , hence Λm increases steeply. b) $E_{cell} = E^{o}_{cell} - \frac{0.059}{n} \log \frac{[Mg2+]}{[Cu2+]}$ $= 2.71\ V - \frac{0.059}{2} \log \frac{0.1}{0.001}$ $= 2.71\ V - \frac{0.059}{2} \log 10^{2}$ $= 2.651\ V$	1 1 1 1 1
25	a) A: Na_2CrO_4 ; B: $Na_2Cr_2O_7$; C : $K_2Cr_2O_7$ $4\ FeCr_2O_4 + 8\ Na_2CO_3 + 7\ O_2 \rightarrow 8\ Na_2CrO_4 + 2\ Fe_2O_3 + 8\ CO_2$ $2Na_2CrO_4 + 2\ H^+ \rightarrow Na_2Cr_2O_7 + 2\ Na^+ + H_2O$ $Na_2Cr_2O_7 + 2\ KCl \rightarrow K_2Cr_2O_7 + 2\ NaCl$	½ , ½ , 1 1 1 1
	OR	
25	a) i)Copper; Due to high $\Delta_a H^{\ominus}$ and low $\Delta_{hyd} H^{\ominus}$ ii) Cerium ; Due to stable $4f^0$ configuration / Tb ; Due to stable $4f^7$ configuration b) i) Due to ability of oxygen to form multiple bonds to metal ii) HCl is oxidized to chlorine iii) Due to strong interatomic metallic bonding.	½ , ½ ½ , ½ 1 1 1
26	a) i).  ii) .  b) i) Because it is a deactivating group / Due to electron withdrawing carboxylic group resulting in decreased electron density at o- and p- position. ii) Due to extensive association of carboxylic acid molecules through intermolecular hydrogen bonding. iii) Due to steric and + I effect of two methyl groups in propanone	1 1 1 1 1
	OR	
26	a) i) .  ii) CH_3COOH iii) CH_3 -CH(Br)-COOH b) i) Add ammonical solution of silver nitrate / Tollen's reagent to both the compounds, propanal will give silver mirror while propanone does not. ii) Add $NaHCO_3$ solution to both the compounds, benzoic acid will give effervescence and liberate CO_2 while benzaldehyde will not. (Or any other suitable test)	1 1 1 1 1 1

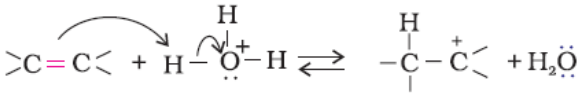
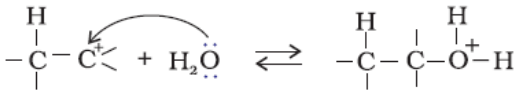
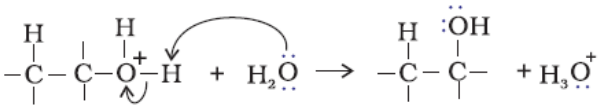
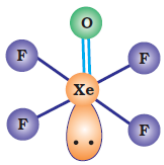
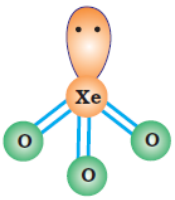
1	Dr. (Mrs.) Sangeeta Bhatia		6	Sh. Rakesh Dhawan	
2	Dr. K.N. Uppadhya		7	Dr. (Mrs.) Sunita Ramrakhiani	
3	Prof. R.D. Shukla		8	Mrs. Preeti Kiran	
4	Sh. S.K. Munjal		9	Dr. Azhar Aslam Khan	
5	Sh. D.A. Mishra		10	Ms. Garima Bhutani	

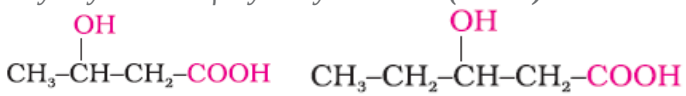
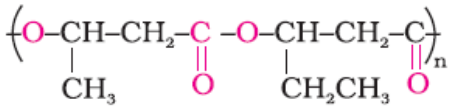
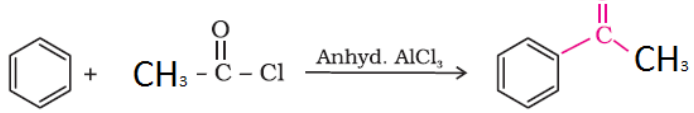
Marking scheme – 2017 (Compartment)

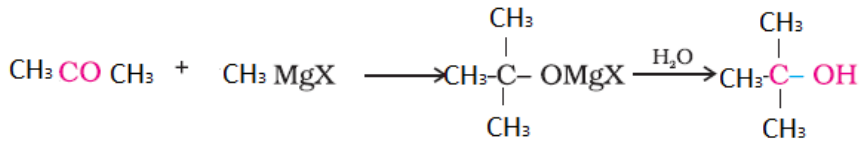
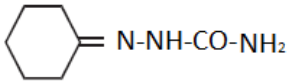
CHEMISTRY (043)/ CLASS XII

Set 56/1/2

Q.No	Value Points	Marks
1	Orbital splitting energies are not sufficiently large for forcing pairing	1
2	2,3-dinitro phenol	1
3	Having α- hydrogen	1
4	$(NH_4)_3 PO_4$ / PO_4^{3-}	1
5	ccp / fcc	1
6	Hypophosphorous acid is a good reducing agent as it contains two P-H bonds. There is no P-H bond in orthophosphoric acid , so it is not a reducing agent Example : It reduces $AgNO_3$ to metallic silver/ chemical equation	1 1
	OR	
6	a) 4 b) Due to lower bond dissociation enthalpy of BiH_3 as compared to SbH_3	1 1
7	i) (b) is chiral ii) (a)	1 1
8	(i) Zero order (ii) Mol $L^{-1}s^{-1}$	1 1
9	Vapour pressure of the solvent decreases in the presence of non – voilatile solute (glucose) hence boiling point increases	2
10.	i. Due to resonance the two S-O bond lengths are identical. ii. Absence of d- orbitals and most electronegative element.	1 1
11	a) Peptide linakge b) Water soluble – Vit. B/C , Fat soluble- Vit. A/D/E/K/B_{12} c) . 	1 ½ , ½ 1
12	a) Temperature above which micelle formation takes place. b) Process of converting freshly prepared precipitate into sol by shaking it with dispersion medium along with a small amount of suitable electrolyte. c) The potential difference between fixed layer and the diffused layer	1 1 1
13	i) Treatment of hyperacidity Class : Antacids ii) Relieve pain and produce sleep Class: Narcotic analgesics iii) Relieve pain and reduce fever Class: Non- Narcotic analgesics / Analgesics	½ ½ ½ ½ ½ ½
14	a) Glycosidic linkage b) Source : Meat, Fish, egg, curd (any one) ; Pernicious anaemia c) DNA is double strand while RNA is single strand molecule (or any other correct difference)	1 ½ , ½ 1
15	a) CH_3-O-CH_3 + HI ⟶ CH_3-OH + CH_3-I	1

	b) . Protonation of alkene to form carbocation by electrophilic attack of H_3O^+. $H_2O + H^+ \rightarrow H_3O^+$  Nucleophilic attack of water on carbocation.  Deprotonation to form an alcohol. 	½ ½ 1
16	In fcc, z=4 ; d = (zxM) /a^3x N_A (i) No. of atoms = $\frac{w}{M}$ × N_A $2.5 \times 10^{24} = \frac{250g}{M} \times N_A$ M= [250 × N_A] /2.5×10^{24} (ii) Putting values of M in equation (i) d= 4 x 250 g × N_A / [2.5×10^{24} atoms × $(400x10^{-10}$ cm$)^3$ x N_A] d= 6.25 g/ cm^3 (or any other correct method)	½ 1 ½ 1
17	a) The metal is converted into its volatile compound and collected elsewhere. It is then decomposed to get the pure metal. b) i)Ni ii) Ti/Zr c) It is used to separate two sulphide ores by preventing one to form froth.	1 ½ + ½ 1
18.	$p_{total} = p_1^o + (p_2^o - p_1^o)\ x_2$ 600= 450 + (700-450) x_2 x_2 = 0.6 x_2 = 1- 0.6 = 0.4	1 1 ½ ½
19.	a) $H_2O < H_2S < H_2Se < H_2Te$, because of decrease in bond dissociation enthalpy. b) 	1,1 1
	OR	
	a) i)Due to higher oxidation state of P in PCl_5 ii) Liberation of hydrogen prevents the formation of $FeCl_3$ b) 	1 1 1

20.	Hybridisation : sp^3d^2 Magnetic character : Paramagnetic Spin nature: High spin	1 1 1
21	a) A: CH_3- $CH=CH_2$ B: CH_3- CH_2-CH_2Br C: CH_3- CH_2-CH_2I D: CH_3- CH_2-CH_2MgI  Aryl halide X = Cl, Br , CN b)	½ × 4 1
22	$P_A = 2Po - Pt$ $= (2 \times 0.3) - 0.5 = 0.1$ $k = \frac{2.303}{t} \log Po/P_A$ $k = \frac{2.303}{100} \log 0.3/0.1$ $k = \frac{2.303}{100} \times 0.4771$ $= 1.1 \times 10^{-2}\ s^{-1}$	½ ½ 1 1
23	a) *Poly β-hydroxybutyrate – co-β-hydroxy valerate / (PHBV)* *Monomers :*  *Repeating unit :*  *b)* PHBV is used in speciality packaging, orthopaedic devices and in controlled release of drugs.(any two) c) Concern for environment , caring (or any other)	½ ½ , ½ ½ ½ , ½ ½ , ½
24	a) A: Na_2CrO_4 ; B: $Na_2Cr_2O_7$; C : $K_2Cr_2O_7$ $4\ FeCr_2O_4 + 8\ Na_2CO_3 + 7\ O_2 \rightarrow 8\ Na_2CrO_4 + 2\ Fe_2O_3 + 8\ CO_2$ $2Na_2CrO_4 + 2\ H^+ \rightarrow Na_2Cr_2O_7 + 2\ Na^+ + H_2O$ $Na_2Cr_2O_7 + 2\ KCl \rightarrow K_2Cr_2O_7 + 2\ NaCl$	½ , ½ , 1 1 1 1
	OR	
24	a) i)Copper; Due to high $\Delta_a H^\ominus$ and low $\Delta_{hyd} H^\ominus$ ii) Cerium ; Due to stable $4f^0$ configuration / Tb ; Due to stable $4f^7$ configuration b) i) Due to ability of oxygen to form multiple bonds to metal ii) HCl is oxidized to chlorine iii) Due to strong interatomic metallic bonding.	½ , ½ ½ , ½ 1 1 1
25	a) i).  ii) .	1

		1
	b) i) Because it is a deactivating group / Due to electron withdrawing carboxylic group resulting in decreased electron density at o- and p- position. ii) Due to extensive association of carboxylic acid molecules through intermolecular hydrogen bonding. iii) Due to steric and + I effect of two methyl groups in propanone	1 1 1
	OR	
25	a) i) .  ii) CH_3COOH iii) CH_3 -CH(Br)-COOH b) i) Add ammonical solution of silver nitrate / Tollen's reagent to both the compounds, propanal will give silver mirror while propanone does not. ii) Add $NaHCO_3$ solution to both the compounds, Benzoic acid will give effervescence and liberate CO_2 while benzaldehyde will not. (Or any other suitable test)	1 1 1 1 1 1
26	a) E^0 value of silver is lower than that of gold, hence silver displaces gold which gets deposited on the silver object. E^0 value of copper is lower than that of silver, hence silver cannot displace copper from its solution. b) i) Electrons flow from Zn to Ag plate. ii) Zn as anode and Ag acts as cathode iii) Cell will stop functioning iv) Concentration of Zn^{2+} ions will increase and that of Ag^+ ions will decrease. v) No change	1 1 ½ ½ ½ ½, ½ ½
	OR	
26	a) When concentration approaches zero, the molar conductivity is known as **limiting molar conductivity** The change in Λm with dilution is due to the increase in the degree of dissociation and consequently the number of ions in the total volume of the solution that contains 1 mol of electrolyte , hence Λm increases steeply. b) $E_{cell} = E^o_{cell} - \frac{0.059}{n} \log \frac{[Mg2+]}{[Cu2+]}$ $=2.71\ V - \frac{0.059}{2} \log \frac{0.1}{0.001}$ $=2.71\ V - \frac{0.059}{2} \log 10^2$ $= 2.651\ V$	1 1 1 1 1

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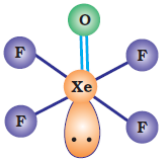
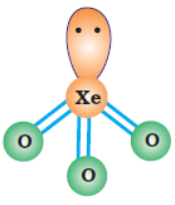
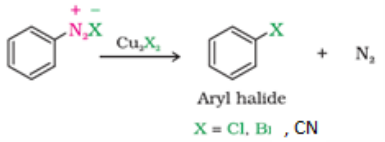
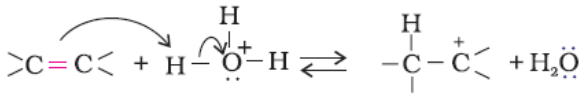
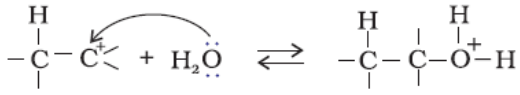
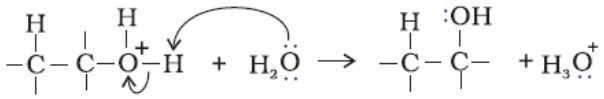
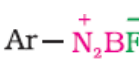
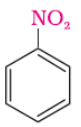
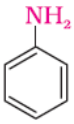
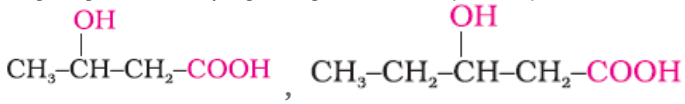
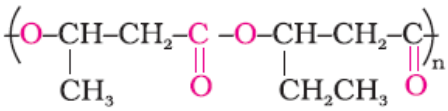
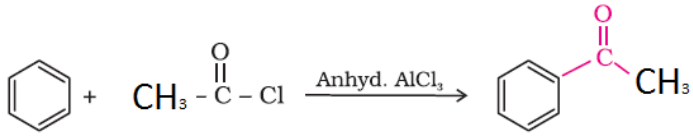
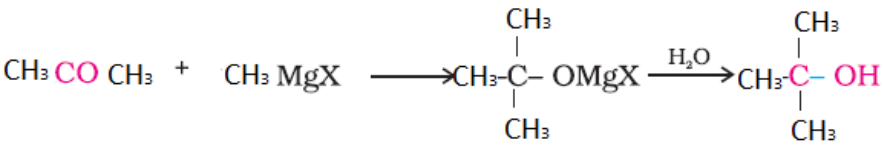
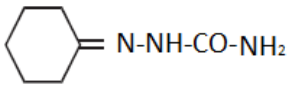
Marking scheme – 2017 (Compartment)

CHEMISTRY (043)/ CLASS XII

Set 56/1/3

Q.No	Value Points	Marks
1	Having no α- hydrogen	1
2	Frenkel Defect	1
3	$K_4[Fe(CN)_6]$ / $[Fe(CN)_6]^{4-}$	1
4	Orbital splitting energies are not sufficiently large for forcing pairing	1
5	2,3-dinitro phenol	1
6	(i) First order (ii) s^{-1} / time $^{-1}$	1 1
7	i) In NH_4^+, all are bond pairs whereas in ammonia the lone pair of electron on nitrogen repels the bond pairs and reduces the bond angle. ii) I-Cl bond is weaker than I-I bond / low bond dissociation enthalpy in I-Cl	1 1
8	Vapour pressure of the solvent decreases in the presence of non – voilatile solute (glucose) hence boiling point increases	2
9	i) (b) is chiral ii) (a) will undergo S_N2 reaction faster	1 1
10.	Hypophosphorous acid is a good reducing agent as it contains two P-H bonds. There is no P-H bond in orthophosphoric acid , so it is not a reducing agent Example : It reduces $AgNO_3$ to metallic silver/ chemical equation	1 1
	OR	
10	a) 4 b) Due to lower bond dissociation enthalpy of BiH_3 as compared to SbH_3	1 1
11	i) The process of removing an adsorbed substance from a surface on which it is adsorbed. ii) The formation of micelles takes place only above a particular concentration called CMC. iii) The catalytic reaction that depends upon the pore structure of the catalyst and size of the reactant and product molecules.	1 1 1
12	a) $H_2O < H_2S < H_2Se < H_2Te$, because of decrease in bond dissociation enthalpy. b) 	1,1 1
	OR	
12	a) i)Due to higher oxidation state of P in PCl_5 ii) Liberation of hydrogen prevents the formation of $FeCl_3$ b) 	1 1 1

13	a) A: CH_3- $CH{=}CH_2$ B: CH_3- CH_2-CH_2Br C: CH_3- CH_2-CH_2I D: CH_3- CH_2-CH_2MgI  b)	½ × 4 1
14	a) CH_3-O-CH_3 + HI ⟶ CH_3-OH + CH_3-I b) . Protonation of alkene to form carbocation by electrophilic attack of H_3O^+. $H_2O + H^+ \rightarrow H_3O^+$  Nucleophilic attack of water on carbocation.  Deprotonation to form an alcohol. 	1 ½ ½ 1
15	In bcc, z=2 ; d = (zxM) /a^3x N_A (i) No. of atoms = $\frac{w}{M}$ × N_A $2.5 \times 10^{24} = \frac{250\,g}{M} \times N_A$ M= 250 × NA /2.5×10^{24} (ii) Putting values of M in equation (i) d= 2 x 250 g × N_A / [2.5×10^{24} atoms × $(400 \times 10^{-10}$ cm$)^3$ x N_A] d= 3.125 g/ cm^3 (or any other correct method)	 ½ 1 ½ 1 1
16	P_A = 2Po – Pt = (2 × 35) – 63 = 7 k= $\frac{2.303}{t}$ log Po/P_A k= $\frac{2.303}{100}$ log 35/7 k= $\frac{2.303}{100}$ × 0.6990 = 2.236×10^{-3} s^{-1} (or any other correct method)	½ ½ 1 1
17	i) A: CH_3- CH_2CN ; B: CH_3- CH_2- CH_2NH_2 ; C: CH_3- CH_2- CH_2-NH-$COCH_3$ ii) A:  ; B:  C : 	½ ×3 ½ ×3
18.	a) Glycosidic linkage b) Source : Meat, Fish, egg, curd (any one) ; Pernicious anaemia	1

	c) DNA is double strand while RNA is single strand molecule (or any other correct difference)	½ , ½ 1
19.	Hybridisation : dsp^2 Magnetic character : Diamagnetic Spin nature: Low spin	1 1 1
20.	i) Controlling depression and hypertension Class : Tranquilizers ii) Relieve pain and reduce fever Class: Non- Narcotic analgesics / Analgesics iii) Kills or inhibits the growth of micro organisms Class: Antibiotics	½ ½ ½ ½ ½ ½
21	$p_{total} = p_1^o + (p_2^o - p_1^o)\ x_2$ $600 = 450 + (700-450)\ x_2$ $x_2 = 0.6$ $x_2 = 1 - 0.6 = 0.4$	1 1 ½ ½
22	a) Impurities are more soluble in the melt than in the solid state of the metal. Example : Ge/ Si/ B (any other) b) i)Zn/ Hg ii) Sn	½ ½ 1 1
23	a) ***Poly β-hydroxybutyrate – co-β-hydroxy valerate / (PHBV)*** ***Monomers :***  ***Repeating unit :***  *b)* PHBV is used in speciality packaging, orthopaedic devices and in controlled release of drugs.(any two) c) Concern for environment , caring (or any other)	½ ½ , ½ ½ ½ , ½ ½ , ½
24	a) i).  ii) .  b) i) Because it is a deactivating group / Due to electron withdrawing carboxylic group resulting in decreased electron density at o- and p- position. ii) Due to extensive association of carboxylic acid molecules through intermolecular hydrogen bonding. iii) Due to steric and + I effect of two methyl groups in propanone	1 1 1 1 1
	OR	
24	a) i) . 	1

	ii) CH_3COOH iii) CH_3 -CH(Br)-COOH b) i) Add ammonical solution of silver nitrate / Tollen's reagent to both the compounds, propanal will give silver mirror while propanone does not. ii) Add $NaHCO_3$ solution to both the compounds, Benzoic acid will give effervescence and liberate CO_2 while benzaldehyde will not. (Or any other suitable test)	1 1 1 1
25	a) E^0 value of silver is lower than that of gold, hence silver displaces gold which gets deposited on the silver object. E^0 value of copper is lower than that of silver, hence silver cannot displace copper from its solution. b) i) Electrons flow from Zn to Ag plate. ii) Zn as anode and Ag acts as cathode iii) Cell will stop functioning iv) Concentration of Zn^{2+} ions will increase and that of Ag^+ ions will decrease. v) No change	1 1 ½ ½ ½ ½, ½ ½
	OR	
25	a) When concentration approaches zero, the molar conductivity is known as **limiting molar conductivity** The change in Λm with dilution is due to the increase in the degree of dissociation and consequently the number of ions in the total volume of the solution that contains 1 mol of electrolyte , hence Λm increases steeply. b) $E_{cell} = E^o_{cell} - \frac{0.059}{n} \log \frac{[Mg2+]}{[Cu2+]}$ $=2.71\ V - \frac{0.059}{2} \log \frac{0.1}{0.001}$ $=2.71\ V - \frac{0.059}{2} \log 10^2$ $= 2.651\ V$	1 1 1 1 1
26	a) A: Na_2CrO_4 ; B: $Na_2Cr_2O_7$; C : $K_2Cr_2O_7$ $4\ FeCr_2O_4 + 8\ Na_2CO_3 + 7\ O_2 \rightarrow 8\ Na_2CrO_4 + 2\ Fe_2O_3 + 8\ CO_2$ $2Na_2CrO_4 + 2\ H^+ \rightarrow Na_2Cr_2O_7 + 2\ Na^+ + H_2O$ $Na_2Cr_2O_7 + 2\ KCl \rightarrow K_2Cr_2O_7 + 2\ NaCl$	½ , ½ , 1 1 1 1
	OR	
26	a) i)Copper; Due to high $\Delta_a H^\ominus$ and low $\Delta_{hyd} H^\ominus$ ii) Cerium ; Due to stable $4f^0$ configuration / Tb ; Due to stable $4f^7$ configuration b) i) Due to ability of oxygen to form multiple bonds to metal ii) HCl is oxidized to chlorine iii) Due to strong interatomic metallic bonding.	½ , ½ ½ , ½ 1 1 1

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