



General Instructions :

Read the following instructions carefully and follow them :

- (i) This question paper contains **33** questions. **All** questions are **compulsory**.
- (ii) This question paper is divided into **five** sections – **Section A, B, C, D** and **E**.
- (iii) **Section A** – questions number **1** to **16** are multiple choice type questions. Each question carries **1** mark.
- (iv) **Section B** – questions number **17** to **21** are very short answer type questions. Each question carries **2** marks.
- (v) **Section C** – questions number **22** to **28** are short answer type questions. Each question carries **3** marks.
- (vi) **Section D** – questions number **29** and **30** are case-based questions. Each question carries **4** marks.
- (vii) **Section E** – questions number **31** to **33** are long answer type questions. Each question carries **5** marks.
- (viii) There is no overall choice given in the question paper. However, an internal choice has been provided in few questions in all the sections except Section A.
- (ix) Kindly note that there is a separate question paper for Visually Impaired candidates.
- (x) Use of calculator is **not** allowed.

SECTION A

Questions no. **1** to **16** are Multiple Choice type Questions, carrying **1** mark each.

$16 \times 1 = 16$

1. Williamson synthesis of preparing unsymmetrical ether is :
 - (A) S_N1 reaction
 - (B) S_N2 reaction
 - (C) Electrophilic addition reaction
 - (D) Elimination reaction
2. Which of the following compounds would be hydrolysed by aqueous KOH most easily ?
 - (A) $CH_2 = CH - Br$
 - (B) $CH_3 - CH_2 - Br$
 - (C) $CH_3 - CH - CH_3$
 |
 Br
 - (D) $CH_2 = CH - CH_2 - Br$



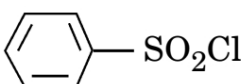
3. According to Werner's theory of coordination compounds :
- (A) Primary valences are ionisable.
 - (B) Secondary valences are ionisable.
 - (C) Both primary and secondary valences are non-ionisable.
 - (D) Both primary and secondary valences are ionisable.
4. Which of the following complex ion is **not** optically active ?
- (A) $[\text{Co}(\text{ox})_3]^{3-}$
 - (B) $\text{cis-}[\text{Co}(\text{en})_2\text{Cl}_2]^+$
 - (C) $\text{trans-}[\text{Co}(\text{en})_2\text{Cl}_2]^+$
 - (D) $[\text{Co}(\text{en})_3]^{3+}$
5. Which of the following is the softest metal ?
- (A) Zn
 - (B) Sc
 - (C) Cu
 - (D) Fe



6. In the Hinsberg's method for separation of primary, secondary and tertiary amines, the reagent used is :

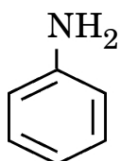
(A) Nitrous acid

(B) $\text{CHCl}_3 + \text{aq. NaOH}$

(C) 

(D) $\text{HCl} / \text{ZnCl}_2$

7. Which one of the following amines gives an alcohol on reaction with HNO_2 ?

(A) 

(B) $\text{C}_2\text{H}_5\text{NH}_2$

(C) $(\text{C}_2\text{H}_5)_2\text{NH}$

(D) $(\text{C}_2\text{H}_5)_3\text{N}$

8. The freezing point of one molal KCl solution, assuming KCl to be completely dissociated in water, is : (K_f for water = $1.86 \text{ K kg mol}^{-1}$)

(A) -3.72°C

(B) $+3.72^\circ\text{C}$

(C) -1.86°C

(D) $+2.72^\circ\text{C}$



9. A solution of acetone in ethanol :
- (A) obeys Raoult's law.
 - (B) forms an ideal solution.
 - (C) shows a positive deviation from Raoult's law.
 - (D) shows a negative deviation from Raoult's law.
10. Which of the following cell converts the energy of combustion of fuel into electrical energy ?
- (A) Mercury cell
 - (B) Fuel cell
 - (C) Dry cell
 - (D) Lead storage cell
11. The unit of rate and rate constant are same for a :
- (A) First order reaction
 - (B) Second order reaction
 - (C) Zero order reaction
 - (D) Third order reaction
12. Pyranose ring of glucose is formed due to the reaction between :
- (A) C_1 and C_3
 - (B) C_1 and C_5
 - (C) C_1 and C_4
 - (D) C_1 and C_2



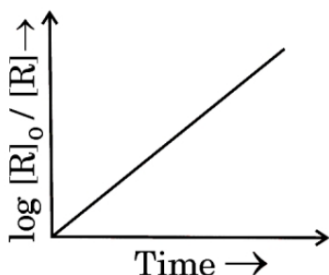
For Questions number 13 to 16, two statements are given — one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

- (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is **not** the correct explanation of the Assertion (A).
- (C) Assertion (A) is true, but Reason (R) is false.
- (D) Assertion (A) is false, but Reason (R) is true.

13. *Assertion (A)* : Actinoids show wide range of oxidation states.
Reason (R) : Actinoids are radioactive in nature.
14. *Assertion (A)* : Hydrolysis of an ester follows first order kinetics.
Reason (R) : The concentration of water does not get altered much during the reaction.
15. *Assertion(A)*: Boiling point of $(\text{CH}_3)_3\text{N}$ is higher than that of $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$.
Reason (R) : Hydrogen bonding is more extensive in $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$.
16. *Assertion (A)* : Phenol is strongly acidic as compared to ethanol.
Reason (R) : Phenoxide ion is more stable than ethoxide ion.

SECTION B

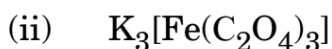
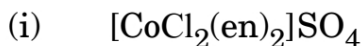
17. State Henry's law. Why are aquatic species more comfortable in cold water as compared to warm water ? 2
18. Observe the graph in the given figure and answer the following questions : 1+1=2



- (a) Predict the order of reaction.
- (b) What is the slope of the curve ?



19. (a) Write IUPAC names of the following coordination compounds : $1+1=2$



OR

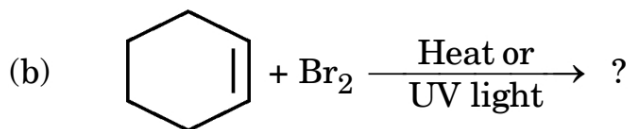
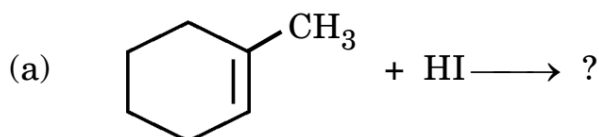
(b) Differentiate between : $1+1=2$

(i) Double salt and Complex compound

(ii) Didentate ligand and Ambidentate ligand

20. Draw the structures of major monohalo products in each of the following

reactions : $1+1=2$



21. How do you explain the following ? $1+1=2$

(a) Presence of an aldehydic group in glucose.

(b) Presence of five – OH groups in glucose.

SECTION C

22. Vapour pressure of pure water at 298 K is 24.8 mm Hg. Calculate the lowering in vapour pressure of an aqueous solution which freezes at -0.3°C . (K_f of water = $1.86 \text{ K kg mol}^{-1}$) 3

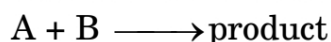
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23. The rate of a reaction :



is given below as a function of different initial concentrations of A and B.

Experiment	[A] / mol L ⁻¹	[B] / mol L ⁻¹	Initial Rate/mol L ⁻¹ min ⁻¹
1	0.01	0.01	5×10^{-3}
2	0.02	0.01	1×10^{-2}
3	0.01	0.02	5×10^{-3}

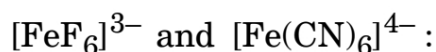
Calculate the order of the reaction with respect to A and B. Determine the rate constant of the reaction. 3

24. Give reasons for the following :

3×1=3

- (a) The pH of aqueous NaCl increases when it is electrolysed.
- (b) Unlike dry cell, mercury cell has a constant cell potential through its lifetime.
- (c) Conductivity of solution decreases with dilution.

25. (a) Answer the following about the complexes 3×1=3



- (i) Write the hybridization involved in each case.
- (ii) Which of them is the outer orbital complex and which one is the inner orbital complex ?
- (iii) Compare their magnetic behaviour.

[Atomic number : Fe = 26]

OR

(b) (i) What happens to the colour of complex $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ when heated gradually ?

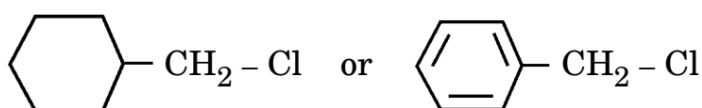
(ii) Write the electronic configuration for d^5 ion if $\Delta_0 < P$.

(iii) Write the hybridization and magnetic behaviour of the complex $[\text{Ni}(\text{CO})_4]$.

[Atomic number : Ni = 28]

3×1=3

26. Write any two differences between S_N1 and S_N2 reactions. Which of the following compounds would undergo S_N1 reaction faster and why ? 3



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P.T.O.



27. A compound (A) with molecular formula  $C_4H_5N$  on reduction with DIBAL-H followed by hydrolysis, gives a compound (B). Compound (B) gives positive Tollens' test but does not give iodoform test. Compound (B) can also be obtained when ethanal is treated with dilute NaOH followed by heating. Identify (A) and (B). Write the reactions of (A) with DIBAL-H followed by hydrolysis. 3
28. How will you obtain the following from aniline ? Give chemical equations only. 3×1=3
- (a) Sulphanilic acid
  - (b) Phenylisocyanide
  - (c) Acetanilide

### SECTION D

*The following questions are case-based questions. Read the case carefully and answer the questions that follow.*

29. Alcohols undergo a number of reactions involving the cleavage of C – OH bond. However, phenols do not undergo reactions involving the cleavage of C – OH bond. Alcohols are weaker acids than water. Alcohols react with halogen acids to form the corresponding haloalkanes. Phenols are stronger acids than alcohols. A characteristic feature of phenols is that they undergo electrophilic substitution reactions such as halogenation, nitration, etc. Since – OH group is a strong activating group, phenol gives trisubstituted products during halogenation, nitration, etc.
- (a) What happens when phenol is treated with the following ? 2
    - (i)  $Br_2$  water
    - (ii) Conc.  $HNO_3$
  - (b) (i) Write the mechanism of alcohol reacting as nucleophile in a reaction with  $CH_3^+$ . 1

**OR**

- (b) (ii) Why do phenols not undergo reactions involving cleavage of C – OH bond ? 1
- (c) How can you distinguish between Butan-1-ol and 2-Methylpropan-2-ol by using HCl in the presence of anhydrous  $ZnCl_2$  ? 1

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P.T.O.



30. The  $\alpha$ -amino acids are the building blocks of proteins. All  $\alpha$ -amino acids exist as zwitter ion due to which they show amphoteric behaviour. All amino acids are joined through peptide bond. Proteins are broadly classified as globular proteins and fibrous proteins. Globular proteins are water soluble, whereas fibrous proteins are not. The complete structure of protein is discussed at four different levels i.e. primary, secondary, tertiary and quaternary structures. Protein loses its biological activity in denatured form.
- (a) Define the following : 2  
(i) Peptide linkage (ii) Denatured protein
- (b) Why do amino acids show amphoteric behaviour ? 1
- (c) (i) How can you differentiate between Fibrous protein and Globular protein ? 1
- OR**
- (c) (ii) Write the names of two different secondary structures of proteins. 1

### SECTION E

31. (a) (i) Calculate  $E_{\text{cell}}$  of a galvanic cell in which the following reaction takes place at  $25^\circ\text{C}$  :
- $$\text{Zn(s)} + \text{Pb}^{2+}(0.02 \text{ M}) \longrightarrow \text{Zn}^{2+}(0.1 \text{ M}) + \text{Pb(s)}$$
- [Given :  $E_{\text{Zn}^{2+}/\text{Zn}}^\circ = -0.76 \text{ V}$ ,  $E_{\text{Pb}^{2+}/\text{Pb}}^\circ = -0.13 \text{ V}$ ;  
 $\log 2 = 0.3010$ ,  $\log 4 = 0.6021$ ,  $\log 5 = 0.6990$ ].
- (ii) State Faraday's first law of electrolysis. How much electricity, in terms of Faraday, is required to reduce one mol of  $\text{MnO}_4^-$  to  $\text{Mn}^{2+}$  ion ? 3+2=5

**OR**

- (b) (i) The resistance of a conductivity cell containing  $0.001 \text{ M}$   $\text{KCl}$  solution at  $298 \text{ K}$  is  $1000 \text{ ohm}$ . What is the cell constant if conductivity of  $0.001 \text{ M}$   $\text{KCl}$  solution at  $298 \text{ K}$  is  $0.125 \times 10^{-3} \text{ S cm}^{-1}$  ?
- (ii) Calculate the  $E_{\text{Mg}^{2+}/\text{Mg}}$  potential for the following half cell at  $25^\circ\text{C}$  :
- $$\text{Mg}/\text{Mg}^{2+} (1 \times 10^{-4} \text{ M}); E_{\text{Mg}^{2+}/\text{Mg}}^\circ = +2.36 \text{ V}$$
- [Given :  $\log 10 = 1$ ]
- (iii) What is the effect of temperature on the electrical conductance of metallic conductor ? 2+2+1=5



32. (a) (i) Account for the following :
- (I) Orange colour of  $\text{Cr}_2\text{O}_7^{2-}$  ion changes to yellow when treated with an alkali.
- (II) Zn, Cd and Hg are non-transition elements.
- (III)  $E^\circ$  value for  $\text{Mn}^{3+}/\text{Mn}^{2+}$  couple is highly positive (+1.57 V) as compared to  $\text{Cr}^{3+}/\text{Cr}^{2+}$ .

(ii) What happens when :

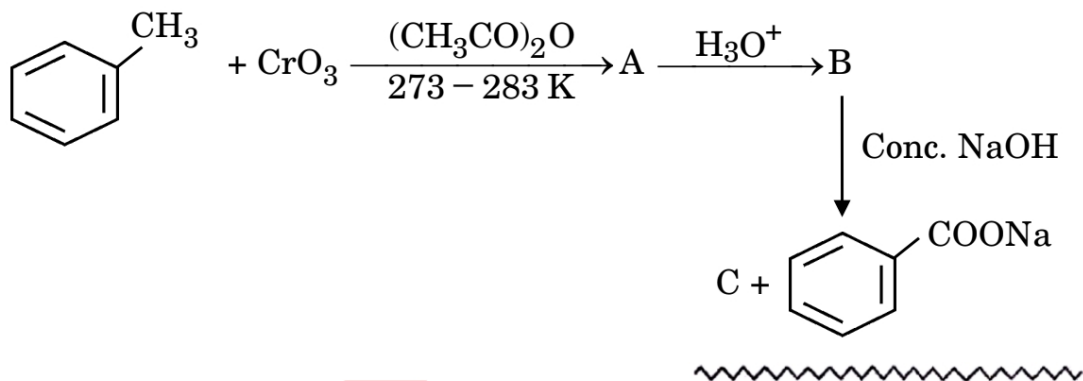
- (I) Manganate ion undergoes disproportionation reaction in acidic medium ?
- (II)  $\text{KMnO}_4$  is heated ? 3+2=5

**OR**

(b) Answer the following questions : 5×1=5

- (i) What is 'Misch metal' ? Give its one use.
- (ii) Write the formula of an oxoanion of chromium in which it shows the oxidation state equal to its group number.
- (iii) Why does Vanadium pentoxide ( $\text{V}_2\text{O}_5$ ) act as a catalyst ?
- (iv) Why do transition elements have high enthalpies of atomisation ?
- (v) How do you prepare  $\text{Na}_2\text{Cr}_2\text{O}_7$  from  $\text{Na}_2\text{CrO}_4$  ?

33. (a) (i) Identify A, B and C in the following reactions :



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**# 21 #**

**P.T.O.**



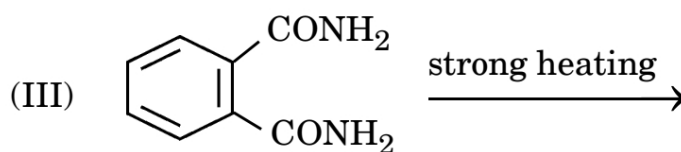
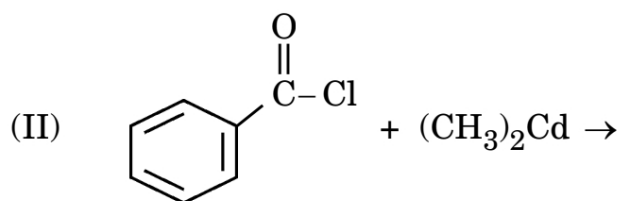
(ii) Give reasons for the following :

(I) Carboxylic acids do not give the characteristic reactions of carbonyl group.

(II) Ethanoic acid is a stronger acid than ethanol. 3+2=5

**OR**

(b) (i) Write the product(s) in the following reactions :



(ii) Write the reaction involved in the following reactions :

(I) Wolff-Kishner Reduction

(II) Decarboxylation Reaction 3+2=5



**Marking Scheme**  
**Strictly Confidential**  
**(For Internal and Restricted use only)**  
**Senior School Certificate Examination, 2024-25**  
**SUBJECT NAME CHEMISTRY (Theory) -043**  
**(Q.P.CODE 56/6/1) MM: 70**

**General Instructions: -**

You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.

**“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC.”**

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. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.**

The Marking scheme carries only suggested value points for the answers

These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.

The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.

Evaluators will mark(√) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**

If a question has parts, please award marks on 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 encircled. This may be followed strictly.

If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.

If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note **“Extra Question”**.

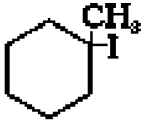

No marks to be deducted for the cumulative effect of an error. It should be penalized only once.

MARKING SCHEME 2024-25

CHEMISTRY (Theory)- 043

QP CODE 56/6/1

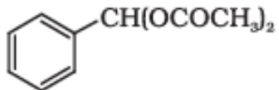
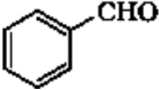
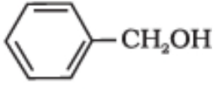
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| Q.No             | Value points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mark   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>SECTION A</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |
| 1                | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 2                | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 3                | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 4                | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 5                | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 6                | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 7                | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 8                | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 9                | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 10               | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 11               | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 12               | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 13               | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 14               | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 15               | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| 16               | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1      |
| <b>SECTION B</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |
| 17               | <ul style="list-style-type: none"> <li>At a constant temperature, the solubility of a gas in a liquid is directly proportional to the partial pressure of the gas present above the surface of liquid or solution/ the partial pressure of the gas in vapour phase (p) is proportional to the mole fraction of the gas (x) in the solution</li> <li>Because the solubility of oxygen increases with decrease in temperature/ Because of low solubility of O<sub>2</sub> in warm water.</li> </ul> | 1<br>1 |
| 18               | a) First order<br>b) Slope= k/ 2.303                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1<br>1 |
| 19               | a) i) Dichloridobis(ethane-1,2-diamine)cobalt(IV) sulphate<br>ii) Potassium trioxalatoferrate(III)                                                                                                                                                                                                                                                                                                                                                                                                | 1<br>1 |
| <b>OR</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |
| 19               | b) i) Double salts dissociate into simple ions while complex compounds do not dissociate completely into ions when dissolved in water. (Or any other suitable difference)<br>ii) When a ligand binds through two donor atoms is called a didentate ligand while a unidentate ligand which has two different donor atoms and either of the two ligates in the complex is called ambidentate ligand.                                                                                                | 1<br>1 |
| 20               | <p>a) </p> <p>b) </p>                                                                                                                                                                                                                                                                                                       | 1<br>1 |





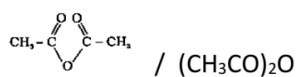


|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                 |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|            | (ii)<br>The amount of chemical reaction which occurs at any electrode during electrolysis by a current is proportional to the quantity of electricity passed through the electrolyte.<br>5F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1<br>1                                                                          |
| <b>OR</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                 |
| <b>31</b>  | (b) (i)<br>$k = G^*/R$<br>$G^* = k \times R = 0.125 \times 10^{-3} \times 1000$<br>$= 0.125 \text{ cm}^{-1}$<br>(ii) $E_{\text{Mg}^{2+}/\text{Mg}} = E^0_{\text{Mg}^{2+}/\text{Mg}} - \frac{0.059}{2} \log \frac{1}{[\text{Mg}^{2+}]}$<br>$= 2.36 \text{ V} - \frac{0.059}{2} \log \frac{1}{10^{-4}}$<br>$= 2.36 - 0.0295 \times 4 \log 10$<br>$= 2.242 \text{ V}$<br>(iii) It decreases with increase in temperature                                                                                                                                                                                                                                                           | $\frac{1}{2}$<br>1<br>$\frac{1}{2}$<br>1<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>1 |
| <b>32</b>  | (a) (i)<br>(I) Due to formation of chromate / $\text{CrO}_4^{2-}$ ion<br>(II) Due to completely filled d-orbitals in ground state as well as oxidised state.<br>(III) Because $\text{Mn}^{2+}$ is more stable due to stable $3d^5$ configuration whereas $\text{Cr}^{3+}$ is more stable due to stable $t_{2g}^3$ configuration.<br>(ii)<br>(I) it changes to permanaganate ion / $\text{MnO}_4^-$ is formed /<br>$3\text{MnO}_4^{2-} + 4\text{H}^+ \rightarrow 2\text{MnO}_4^- + \text{MnO}_2 + 2\text{H}_2\text{O}$<br>(II) Potassium manganate/ $\text{K}_2\text{MnO}_4$ is formed /<br>$2\text{KMnO}_4 \rightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$      | 1<br>1<br>1<br>1<br>1<br>1                                                      |
| <b>OR</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                 |
| <b>32.</b> | (b) i)<br><ul style="list-style-type: none"> <li>An alloy of lanthanoid / an alloy of lanthanoid and iron with traces of S, C, Ca and Al.</li> <li>used in making bullets/shells/ lighter flint</li> </ul> ii) $\text{CrO}_4^{2-}/\text{Cr}_2\text{O}_7^{2-}$<br>iii) variable oxidation state of vanadium / large surface area /Complex formation<br>iv) Because of large number of unpaired electrons in their atoms they have stronger interatomic interaction or strong metallic bonding<br>v) by acidification of $\text{Na}_2\text{CrO}_4$ /<br>$2\text{Na}_2\text{CrO}_4 + 2\text{H}^+ \rightarrow \text{Na}_2\text{Cr}_2\text{O}_7 + 2\text{Na}^+ + \text{H}_2\text{O}$ | $\frac{1}{2} + \frac{1}{2}$<br>1<br>1<br>1<br>1                                 |
| <b>33</b>  | (a) (i)<br><br>A=<br><br>B=<br><br>C=<br>(ii)<br>(I) Because carbon of carboxyl group is less electrophilic due to resonance with -OH group.<br>(II) Because ethanoate ion is more stable than ethoxide ion due to resonance.                                                                                                                                                                                          | 1<br>1<br>1<br>1<br>1                                                           |

33

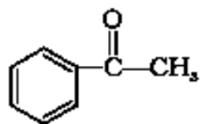
(b) i)

(I)



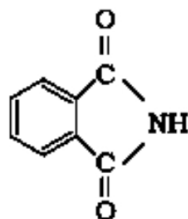
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(II)



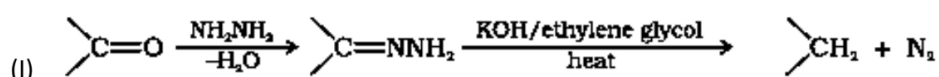
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(III)



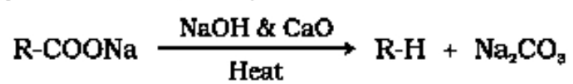
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(ii)



1

(I)



1

(II)