GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
CLASS: XII   SUBJECT:CHEMISTRY

SCHEME OF EXAMINATION AND MARKS DISTRIBUTION (2017-2018 ONWARDS)				FORMATIVE-I (AUG)	FORMATIVE-II (OCT-NOV)	BOARD EXAM	*VARIATION OF MARKS WITHIN GROUP FOR THE BOARD EXAM
DURATION IN MINUTES				60	60	150	
MAXIMUM MARKS				20	20	55	
NUMBER OF QUESTIONS				10	10	25 to 27	
WEIGHTAGE TO OBJECTIVE			KNOWLEDGE	30% ±5%			
			UNDERSTANDING	40%±5%			
			SKILL	10%+5%			
			APPLICATION	20%±5%			
WEIGHTAGE TO CONTENT	GRP-I*	1	THE SOLID STATE	4		3	+1
		2	SOLUTIONS			4	±1
		3	ELECTROCHEMISTRY		4	4	±1
		4	CHEMICAL KINETICS	5		4	±1
		5	SURFACE CHEMISTRY		4	3	+1
	GRP-II*	6	GENERAL PRINCIPLES & PROCESSES OF ISOLATION OF ELEMENTS	3		3	+1
		7	THE *P*-BLOCK ELEMENTS			6	-1
		8	THE *d*-& *f*-BLOCK ELEMENTS		5	4	±1
		9	COORDINATION COMPOUNDS			3	+1
	GRP-III*	10	HALOALKANES& HALOARENES	5		3	±1
		11	ALCOHOLS,PHENOLS AND ETHERS		4	3	±1
		12	ALDEHYDES, KETONES AND CARBOXYLIC ACIDS			5	-1
		13	AMINES			3	±1
	GRP-IV*	14	BIOMOLECULES		3	3	-1
		15	POLYMERS			2	+1
		16	CHEMISTRY IN EVERYDAY LIFE	3		2	+1
WEIGHTAGE TO TYPE OF QUESTIONS		MULTIPLE CHOICE QUESTION (MCQ) ---1MARK		2	2	4-5	
		VERY SHORT ANSWER (VSA)-- 1MARK		2	2	3-4	
		SHORT ANSWER I (SA I)--2MARKS		6	6	16-20	
		SHORT ANSWER (SA II)--3MARKS		6	6	18-24	
		LONG ANSWER (LA)-- 4MARKS		4	4	8	
SCHEME OF OPTIONS							
DIFFICULTY LEVEL		EASY:-30%±5%		AVERAGE:-50%±5%		DIFFICULT :-20%±5%	

PRACTICAL , PROJECT &ASSIGNMENT	FORMATIVE-II (OCT)	PRACTICAL COMPONENT	THEORY COMPONENT	BOARD EXAM
VOLUMETRIC ANALYSIS	06	--	--	07
FUNCTIONAL GROUP	02	--	--	02
INORGANIC COMPOUND	--	--	--	08
JOURNAL + VIVA	1+1	--	--	2+2
INVESTIGATORY PROJECT +VIVA	--	05+0	--	2+2
ASSIGNMENT	--	--	05	--
MAXIMUM MARKS	10	05	05	25
DURATION IN MINUTES	90	--	--	180

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION.
MODEL QUESTION PAPER F.E. I
CHEMISTRY - XII
DURATION :- 1 HOUR   Max Marks: 20

Instructions :-(1) All questions are compulsory, however Q. 4 and Q.10 have internal choice.
(2) Section-A consists of 4 questions of 1 mark each.
Section-B consists of 3 questions of 2 marks each.
Section-C consists of 2 questions of 3 marks each.
Section-D consists of 1 question of 4 marks.

Section-A

The alkyl halides which darken on exposure to light are _____.
●chlorides and bromides   ●chlorides and iodides   ●chlorides and fluorides   1
●bromides and iodides

A first order reaction is 20% complete in 20 minutes . The time required for 80%
completion of the reaction is _____.
● 80 min.   ● 120 min.   ●   44.2 min.   ●   146 min.   1

If initial concentration of a reactant in certain reaction is doubled, the half life period of
the reaction also doubles, then the order of the reaction is _____.
●zero   ●first   ●second   ●third   1

Why are crystalline solids anisotropic in nature?
                    OR   1
Why are old glass window panes thicker at the bottom than at the top?

Section-B

The rate constant of a first order reaction is $1.15 \times 10^{-5} s^{-1}$ .Calculate the percentage
concentration of the reactant that remains after 1 hour. .   2

Give reasons for the following:-
(a) Sodium sulphite is used as a preservative in squashes and mildly acidic foods.   2
(b) Synthetic detergents are preferred over soaps.

(a) Name the chemical substance used as an antiseptic for the eyes in its dilute
    aqueous solution.   2
(b) Define molecularity of a reaction.

. Section-C

Draw a neat labelled diagram of a method used to concentrate Zinc blende. State the
principle involved in chromatography. Write the name and the formula of any one ore   3
of iron.

(a) Draw a neat labelled diagram of a semiconductor formed when silicon is doped with
    an element of group 13.   3
(b) Name and define the type of defect found in NaCl crystal. What is an octahedral
    void?

Section-D

(a) Which of the following isomers has higher melting point and why?
   p- dichlorobenzene or o- dichlorobenzene.
(b)Write chemical equation to prepare toluene from chlorobenzene.
(c) Complete the following reactions and name 'A' and 'B'.

    A + KI $\longrightarrow$ C_6H_5I 4

    C_6H_5I + CH_3I $\xrightarrow{\text{Na/ether}}$ **B**

                    OR

(a) Which of the following halide can be prepared in good yield by free radical
   halogenation of a hydrocarbon and why?
        CH_3-CH_2-Cl or $CH_3 - CH_2 - CH_2 - CH_2 - Cl$
(b)   Write chemical equation for the formation of phosgene.
(c)   Complete the following reactions and name 'A' and 'B'.

    A   +   KOH $\xrightarrow{\text{alc}/\Delta}$ $CH_2 = CH - CH_2- CH_2- CH_3$

    $CH_2 = CH - CH_2- CH_2- CH_3$ + HBr $\longrightarrow$ **B**

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4

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

QUESTION WISE ANALYSIS AND BLUE PRINT OF CHEMISTRY PAPER(FROM 2017-18)

EXAMINATION:-FE-I CLASS:-XII MAX MARKS:-20 DURATION:-60 MINUTES

	Q.NO	UNIT NO	MARKS	FORM				100%	OBJECTIVES			100%	DIFFICULTY LEVEL		100%	DURATION MINUTES
				MCQ	VSA	SA-I	SA-II	LA	K	U	S	A	EASY	AVE	DIF	
TOTAL	10		20	2	2	6	6	4	7	7	2	4	6	10	4	53
%				10%	10%	30%	30%	20%	35%	35%	10%	20%	30%	50%	20%	
	1	10	1	1					1					1		4
	2	4	1	1								1			1	4
	3	4	1		1							1			1	2
	4	1	1		1					1				1		3
	5	4	2			2						2			2	6
	6	16	2			2				2				2		5
	7	16 & 4	2			2			2					2		5
	8	6	3				3		2		1		2	1		7
	9	1	3				3		2		1		2	1		7
	10	10	4					4		4			2	2		10

MCQ=MULTIPLE CHOICE QUESTION	VSA=VERY SHORT ANSWER
SA=SHORT ANSWER	LA=LONG ANSWER

1

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION.
MODEL QUESTION PAPER FE II
CHEMISTRY - XII
DURATION :- 1 HOUR   MAX MARKS: 20

Instructions:- (1) All questions are compulsory, however Q. 7 and Q.10 have internal choice.
  (2) Section-A consists of   4 questions of 1 mark each.
      Section-B consists of   3 questions of 2 marks each.
      Section-C consists of   2 questions of 3 marks each.
      Section-D consists of   1 question of 4 marks.

Section-A

The bond that determines the secondary structure of protein is _____.

●covalent   ●sulphide linkages   ● hydrogen bond   ● ionic bond

1

The increase in the molar conductivity of NH_4OH with dilution is due to _____

●Increase in the self ionization of water   ●Increase in the degree of dissociation of NH_4OH
●Decrease in the self ionization of water   ●Decrease in the inter ionic forces

1

Which of the following ions has the highest coagulating power for As_2S_3 sol and why?
  $[Fe(CN)_6]^{4-}$, Ba^{2+}, SO_4^{2-}, Al^{3+}, PO_4^{3-} and K^+
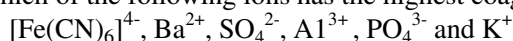
1

Name the alloy which contains 95% lanthanoid metal.

1

Section-B

Write the structures and IUPAC names of 'X' and 'Y' in the following:

$$X + CCl_4 \xrightarrow{\text{aq NaOH}} \text{(benzene ring)—ONa, CCl}_3 \xrightarrow{\text{NaOH / H}^+} Y$$
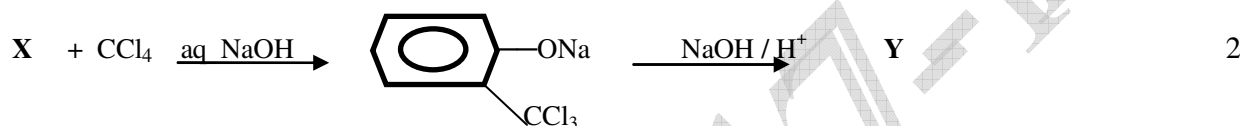
2

(a) Name the vitamin whose deficiency causes bone deformities in children and mention one source of this vitamin.

(b)Name the water soluble component of starch. From maltose, sucrose and lactose select the non reducing sugar

2

.Write labelled equations to show the preparation of:
(a) Butan – 2 – o1 using a suitable aldehyde.
(b) Tert-butyl ethyl ether using a suitable alkyl halide.
OR
Write labelled equations to show what happens when
(a) But – 2 – enal is reacted with PCC.
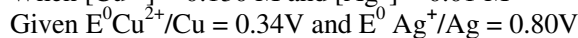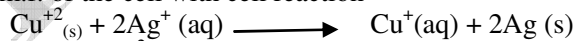(b) Tert-butyl alcohol vapours are passed over copper at 573K.

2

Section-C

Draw a neat labelled diagram to show electrophoresis of a colloidal solution. Name the following:
(a) The device used to coagulate the particles of carbon from smoke.
(b) The process by which soap removes grease and oil.
(c) A substance which enhances the activity of a catalyst.
(d) The potential difference between the fixed and diffused layer of opposite charges in a colloid.

3

Draw a neat labeled diagram of a lead storage battery.
 Calculate the e.m.f. of the cell with cell reaction
  $$Cu^{+2}_{(s)} + 2Ag^+ (aq) \longrightarrow Cu^+(aq) + 2Ag (s)$$
  When $[Cu^{+2}] = 0.130$ M and $[Ag^+] = 0.01$ M
  Given $E^0 Cu^{2+}/Cu = 0.34V$ and $E^0 Ag^+/Ag = 0.80V$

3

Section-D

State giving reason which one of the following has the property as indicated:
(a) Fe or Cu has higher melting point.
(b) CuCl or $CuCl_2$ is colourless.
(c) Lanthanoids or actinoids exhibit greater range of oxidation states.
(d)Ti or Fe has higher density.
OR
State giving reason which one of the following has the property as indicated:.
(a) Co^{2+} or Ni^{2+} has lower magnetic moment.
(b) Cr^{2+} or Mn^{3+} is oxidising.
(c) Lanthanoid contraction or actinoid contraction is greater from element to element.
(d)Ti or Fe exhibits more number of oxidation states.

4

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

QUESTION WISE ANALYSIS AND BLUE PRINT OF CHEMISTRY PAPER(FROM 2017-18)

EXAMINATION:-FE-II　　　　**CLASS:-XII**　　　　**MAX MARKS:-20**　　**DURATION:-60 MINUTES**

	Q.NO	UNIT NO	MARKS	FORM					100% OBJECTIVES				100% DIFFICULTY LEVEL			100% DURATION MINUTES
				MCQ	VSA	SA-I	SA-II	LA	K	U	S	A	EAS	AVE	DIF	
TOTAL	10		20	2	2	6	6	4	6	8	2	4	6	10	4	53
%				10%	10%	30%	30%	20%	30%	40%	10%	20%	30%	50%	20%	
	1	14	1	1					1				1			2
	2	3	1	1						1				1		4
	3	5	1		1					1				1		4
	4	8	1		1				1				1			2
	5	11	2			2						2			2	7
	6	14	2			2			2				2			4
	7	11	2			2				2				2		6
	8	5	3				3		2		1		2	1		7
	9	3	3				3				1	2		1	2	7
	10	8	4					4		4				4		10

MCQ=MULTIPLE CHOICE QUESTION	VSA=VERY SHORT ANSWER

1

SEAT NO:-   **TABLE NO:-**

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Goa Board of Secondary & Higher Secondary Education

Alto, Betim – Goa

FE-II Practical Examination

<u>CHEMISTRY</u>

</div>

Date: **<u>STD:XII</u>**   Duration: 90 Minutes

Session: Max. Marks: 10

N. B.

1) On your answer books write your Examination Seat number and your Laboratory table number.

2) Get the burette reading and confirmatory tests initialed by the Examiner.

3) Check if the number on (i) your table (ii) answer script and (iii) the containers A, B, C, and F are the same. If not, report immediately to the Examiner.

4) Use of non - programmable calculator is allowed.

Atomic Masses:- H=1, C=12, N=14, O=16, S=32, K=39, Mn=55, Fe= 56.

Q.1. You are provided with two solutions as follows:-

Container A:_____N/M stock solution of hydrated Oxalic acid /   Mohr's salt.

Container B: $KMnO_4$ Solution

Using the stock solution from Container **A**, prepare 100 mL of

_____N/M hydrated Oxalic acid /Mohr's salt in the given

Standard Measuring flask **C**.

Using the solution prepared in flask **C**, determine N/M of the solution in container **B.**

Also calculate.

- The strength of the solution in container **B** in terms of grams per _____**mL.**
- The percentage purity of the solution in container **B,** _____ **g** of which have been dissolved per _____**mL.**   (6 Marks)

Q.2. Determine the functional group of the organic compound supplied to you in Container **F** bearing your table number. Give a complete report   of all the tests performed. (2 Marks)

1

Q.3. Journal + Viva   (1+1 Marks)

GOA BOARD OF SECONDARY & HIGHER SECONDARY EDUCATION

Alto, Betim – Goa

HIGHER SECONDARY SCHOOL CERTIFICATE EXAMINATION

CHEMISTRY PRACTICLES (REVISED SYLLABUS FROM MARCH 2015)

INSTRUCTIONS TO CANDIDATE

1. Candidate should be present at the place of examination at least 15 minutes before the commencement of examination.
2. They should bring with them admission card, certified journal, investigatory project report and Handbook of practicals in Chemistry for class XII science. The journal should bear their examination seat number on the cover and it should be handed over to a member of the Laboratory staff when they are admitted to the laboratory, it should be taken back at the end of the examination while leaving the laboratory.
3. Use of non-programmable calculators is allowed.
4. Every candidate will be required to perform the following experiments.
   i. Inorganic volumetric exercise.
   ii. Qualitative analysis of inorganic compound.
   iii. Identification of functional group of organic compound.
5. Students will be examined viva voce on,
   i. Journal (physical experiment/volumetric analysis).
   ii. Investigatory project.
6. Candidate will pick up by lots their table number.
7. Candidates should start the work after carefully reading the exercises and planning the experiment.
8. Candidates should not hesitate to ask for help of the examiners if they required any additional apparatus, chemicals etc.
9. Candidates should make it a point to get their concordant reading and the confirmatory tests initialed by one of the examiners.
10. Candidates are strongly advised to record their observation / reading as they perform the tests/titrations.
11. They must enter burette reading, tests, observations and inference in ink and should present them in tabular form. They should show

   all calculations and the result neatly.

12. Numerical figures should not be over written. In case any entry on the answer book is to be discarded, it should be run through by a single line and the desired entry written near it.
13. Candidates should wash all the apparatus and see that their tables are in good order before they leave the laboratory.
14. Every candidate should bring his/her admission card, without Which the candidates may not be permitted entry to the laboratory.

2

GOA BOARD OF SECONDARY & HIGHER SECONDARY EDUCATION

Alto, Betim – Goa

GUIDELINES FOR CONDUCT OF THE H.S.S.C. PRACTICAL EXAMINATION

IN CHEMISTRY

1. **Volumetric**:

1.1. The quantity of 1M stock solution of hydrated $H_2C_2O_4$, Mohr's salt for Volumetric exercise should be prepared according to number of batches at the centre. The stock solution may be replenished accordingly to the needs.

1.2. It is suggested that the 1N solution of $KMnO_4$ should be diluted to an appropriate concentration to get the titre reading range 8-14 mL before distribution to the students.

1.3. Inorganic Volumetric Analysis:- Redox titration (to be examined by Internal examiner)

1.4. Before the start of the Examination of a batch, the examiners should satisfy themselves that the volumetric solutions are adjusted from the standard solutions supplied so as to give the titre reading between 8 to 14 mL.

1.5. At least three different concentrations of the solution of strength in container B should be distributed to each batch.

1.6. All dilutions from the stock solutions should be prepared with distilled water.

1.7. The concordant reading of the candidates should be initialed by the internal examiner.

1.8. All the three concentrations of the solutions of a given strength designated as B_1, B_2 and B_3 should be given to the expert for obtaining titre readings.

2. Journal and viva: (To be examined by Internal examiner.)

2.1 Student should present:

(a) Minimum of 4 volumetric exercises.

(b) 5 physical experiments (4 from sets A,B and C + any 1 from sets D & E)

(c) 15 inorganic qualitative analysis.

(d) Detection of functional group as per syllabus.

(e) Preparation of Ferrous ammonium sulphate.

2.2 Marks to be allotted for the Journal. As shown in 8.2

2.3 Examiners should ensure that the journal is certified by the competent

authority (Head of the Institution). For certification of journal, the Head of the

Institution should ensure that the candidate has completed 75% or more

experiments prescribed for the course during the Academic year.

2.4 In case a candidate has lost his/her certified journal "ZERO" mark should be given for the journal and viva on journal. In such a case the candidate is required to produce a certificate from the Head of the Institution that he/she performed a

minimum of 75% of the experiments prescribed in the syllabus satisfactorily and his/her journal was certified.

2.5 The candidate will not be allowed to appear for the examination without the

above certificate or the certified journal.

2.6 VIVA

The examiner should ask *two questions* per candidate allotting 1 mark per

3

question. In case the candidate cannot answer the two questions asked by

the examiner, a third question may be asked and if the student answers

correctly only ½ marks to be awarded for viva. **Viva should be limited to**

volumetric analysis and physical experiments only.

3. **Qualitative analysis of water soluble Inorganic compound**
   (To be examined by external examiner)

3.1 While allotting compounds to a particular batch, the code number should be
Mixed (and not given in the serial order) and allotted to the respective table
number.

3.2 As far as possible the same compound should not be set for more than two
candidates in a batch.

3.3 A minimum of 10 compounds from the list given in the question paper should be arranged for the
batch.

3.4 Examiner should see to it that lime water, chlorine water. H_2S Solution,

ammonia solution. Nessler's reagent, Ammonium molybdate, Sodium cobaltinitrite Schiff's reagent and
such other reagents supplied are fresh and in working condition.

3.5 Examiners are expected to satisfy themselves that the candidates have
performed all the tests reported by them especially the confirmatory tests.

3.6 Marks to be allotted for reporting as shown in 8.3

3.7 List of the compounds with code number.

CODE NO	COMPOUND	CODE NO	COMPOUND
D1	NH_4Cl	D23	$Zn(NO_3)_2$
D2	**NH_4Br**	**D24**	**$ZnCl_2$**
D3	$(NH_4)_3PO_4$	D25	$CoCl_2$
D4	**$(NH_4)_2CO_3$**	**D26**	**$CoSO_4$**
D6	$Pb(NO_3)_2$	D27	$Co(NO_3)_2$
D7	**$Pb(CH_3COO)_2$**	**D28**	**$CaCl_2$**
D8	$CuSO_4$	D29	$Ca(NO_3)_2$
D9	**$CuCl_2$**	**D30**	**$Sr(NO_3)_2$**
D10	$Cu(NO_3)_2$	D31	$SrCl_2$
D11	**$AlCl_3$**	**D32**	**$BaCl_2$**
D12	$Al_2(SO_4)_3$	D33	$Ba(NO_3)_2$
D13	**$Al(NO_3)_3$**	**D34**	**M_gSO_4**
D15	$FeCl_3$	D35	$MgCl_2$
D16	**$Fe(NO_3)_3$**	**D36**	**KCl**
D17	$MnCl_2$	D37	KI
D18	**$MnSO_4$**	**D38**	**KBr**
D19	$NiSO_4$	D39	K_2SO_4
D20	**$NiCl_2$**	**D40**	**K_2CO_3**
D21	$Ni(NO_3)_2$	D41	K_3PO_4
D22	**$ZnSO_4$**	**D42**	**$K_2C_2O_4$**

4. **Detection of functional group present in organic compound (To be examined by Internal examiner)**

4.1 Organic compounds containing only one functional group that are alcoholic,

phenolic, aldehydic, Ketonic, Carboxylic and primary amino should be

distributed to the candidates in a batch.

4.2 The list of Compounds that are to be distributed:

Acetic acid, oxalic acid, Benzoic acid, Phenol, β-Naphthol, Ethyl alcohol,

Benzaldehyde, Acetone, Aniline.

5. **Project + Viva (To be evaluated by the External examiner).**

5.1**Viva:** The examiner should ask *two questions* per candidate pertaining only to

project work allotting 1 mark per question. In case the candidate cannot answer the two questions asked by the examiner a third question may be asked and if the student answers correctly only ½ mark to be awarded for viva.

5.2 Examiners have to ensure that the Investigatory project submitted by the candidate for evaluation is certified by the competent authority i.e. by the guide teacher in chemistry of the candidate's Institution or if the candidate has worked for the project in an institution other than that of the candidate the certificate is to be obtained from the similar competent authority of that Institution.

5.3 A typed/printed certificate for the project work should be issued by the Head of the Institution as per format.

5.4 With the exception of the certificate of the project, the entire investigatory project report is to be written neatly and legibly in the candidates own handwriting with diagrams and tables etc. if any, shown clearly and should be certified by the Head of the Institution. Project report should contain minimum **TEN** pages.

5.5 In case a candidate has lost his/her certified project *"ZERO"* marks should be given for the project and viva on the project. In such a case the candidate is required to produce a certificate to that effect from the Head of the Institution.

6. **Instructions regarding the question papers.**

6.1The question papers of each batch are sent to the Head of the Institution at the centre in separate sealed covers.

6.2 The examiners should take the question paper packet for the day and open them about one hour before the commencement of the examination of each batch.

6.3 The question papers for the batch should be checked before they are distributed to the candidates.

7. **Admission of candidates in to the laboratory.**

Candidate should be admitted *and allotted table number by lots system*, into the laboratory only 15 minutes before the commencement of the examination. Due instructions with respect to the questions on the question paper should be given to the candidates within these 15 minutes.

5

8. Scheme for allotment of marks.

8.1 In organic Volumetric Analysis (Redox titration)   **(7 marks)**

(a) Calculation of correct volume of stock solution to prepare Solution C (1 mark)
(b) Correct observations (burette solution, solution in the flask, indicator and colour change)
                                                                (1 mark)
(c) Range of titre reading for allotment of marks is as follows: (Maximum 3 marks)

Error in titre reading   Marks
+0.3mL   3
+0.4mL……………… 2
+0.5mL   1
+0.6mL………………..0

Pilot reading and a set of three concordant reading shall be recorded in the observation table and thus the concordant reading should be taken as the correct reading for assigning the marks for accuracy in the reading.

(a)   Calculations:-   (2 marks)

(1)   Calculation of N/M of solution in container B,by using (1)$N_1V_1 = N_2V_2$ (2)$N_= aM$ (3) $a_1M_1V_1 = a_2M_2V_2$ formula/e, ($a_=$ number of electrons lost or gained per molecule)……………………..
                                    (1 mark)

(2) Calculate and report any one of the following………….   (1 mark)
    (i) Strength of the solution in container B in terms of _____g/_____mL
    (ii) % purity of solution in container B_____g of which have been dissolved per_____mL
N.B. In case the titre reading is not within the range of error then for calculations

(correct formula) ½ mark to be allotted out of the 1 mark allotted for each

calculation. Interconversion of normality to molarity and vice versa should be avoided.

8.2 **JOURNAL + VIVA**   **(2+2 Marks)**

The marks are to be allotted as follows:

(A) For the experiments performed and recorded during the one year period.
                                         (2 marks)
(B) Viva (To be evaluated by the internal examiner) sec 2.6   (2 marks)

8.3 Qualitative analysis of Inorganic Compound   **(8 marks)**

Dry/PreliminaryTests………..(4 marks)	WET TESTS FOR CATION…..(2 marks)
Colour……………………………… (½ mark)	1)Group separation………………(1 mark)
Heating in a dry test tube……..(½ mark)	2)Identification of cation ………(½ mark)
Flame test …………………………(½ mark)	3)C.T. for cation………………(½ mark)
Test for NH_4^+ ……… ……………(½ mark)	
Dil HCl test……………………… (½ mark)	**WET TESTS FOR ANION AND RESULT…………………….. (2 marks)**
Conc H_2SO_4…………………………(½ mark)	(1) Identification of anion……..(1 mark)
Phosphate test ……………………(½ mark)	(2) C.T. for anion…………… (½ mark)
$KMnO_4$test…………………………(½ mark)	(3) **CORRECT FORMULA OF SALT** …………………..……………… (½ mark)
If no anion is detected and if it is SO_4^{-2}, it need not be reported as given in the chart.	

8.4 Identification of functional group. …………………………………… (2 marks)

1.	Carboxylic group	2 marks
2.	Phenolic/ Amino group	If not identified correctly, ½ mark to be given for reporting-COOH group as absent and 1½ marks for detecting phenolic/amino group.
3.	Amino/Phenolic group	If not identified correctly ½ mark to be given for reporting –COOH group as absent, ½ mark for reporting phenolic/amino group absent and 1 mark for detecting the phenolic/amino group correctly.
4.	Carbonyl group	If not identified correctly 1 mark for recording absence of carboxylic group, amino group and phenolic group (½ mark if only two of the groups are reported), ½ mark for detecting CO group and ½ mark for distinguishing Carbonyl group either as –CHO or -CO-
5.	Alcoholic group	If not identified correctly, 1 mark for recording carboxylic, phenolic, amino and carbonyl group as absent. (½ mark only if any of the two above groups are reported) 1 mark for recording alcoholic group correctly.

8.5Project + Viva …………… **(4 marks)**

Systematic presentation and neatness of project …………… (2 marks)

Viva (Sec. 5.1) …………… (2 marks)

9. Scheme for allotment of marks for Formative II practical examination

    1. Volumetric analysis……………..………………………………………6 marks

    a. Calculation of correct volume   …………………………………………1 mark

    b. Correct observations   …………………………………………1 mark

    c. Titre reading   …………………………………………3 marks

    d. Calculations   ………………………………….. ½ + ½ mark

    2. Functional group …………………..………………………………………2 marks

    (Distribution of marks same as for the board examination)

    3. Journal + Viva   ……………………………………… 1+ 1 mark

10. Identification of natural organic substance to be done in Std. XI from the academic year 2014-15 onwards.

    Note:- 1)Except for oils and fats aqueous solutions or suspensions of the food items containing the natural organic substance to be given and not the direct natural organic substance.

    2) Any one of the positive test may be reported.

SEAT NO:-   TABLE NO:-

Goa Board of Secondary & Higher Secondary Education

Alto, Betim – Goa

HSSC Practical Examination

CHEMISTRY

Date: Duration: 3 Hours

Session: Morning/Afternoon   Max. Marks: 25

N. B. 1) Write your Examination Seat number and your Laboratory table number on your answer book.

2) Get the burette reading and confirmatory tests initialed by one of the Examiner.

3) Check if the number on (i) your table (ii) answer book and (iii) the containers A, B, C, D and F are the same. If not, report immediately to the Examiners.

4) Use of non - programmable calculator is allowed.

Atomic Masses:- H=1, C=12, N=14, O=16, S=32, K=39, Mn=55, Fe= 56.

SECTION – I

Q.1.   You are provided with two solutions as follows:-

Container A:_____N/M stock solution of hydrated Oxalic acid / Mohr's salt.

Container B: $KMnO_4$ Solution

Using the stock solution from Container **A**, prepare 100 mL of

_____N/M hydrated Oxalic acid /Mohr's salt in the given

Standard Measuring flask **C**.

Using the solution prepared in flask **C**, determine N/M of the solution in container **B.**

Also calculate.

• The strength of the solution in container **B** in terms of grams per _____**mL.**

- The percentage purity of the solution in container **B,** _____ **g** of which have been dissolved per _____**mL.**   (7 Marks)

Q.2. Determine the functional group of the organic compound supplied to you in Container **F** bearing your table number. Give a complete report of all the tests performed.   (2 Marks)

Q.3. Journal + Viva   (2+2 Marks)

SECTION – II

Q.4. Analyse the inorganic salt given in container **D** bearing your table number qualitatively and detect the cation and anion present. Give a complete report of all the tests performed. Write the formula of the Compound detected.   (8 Marks)

Q.5. Project + Viva   (2+2 Marks)

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
MODEL QUESTION PAPER OF BOARD EXAMINATION(1)
SUBJECT:-CHEMISTRY

CLASS:-XII   MAXIMUM MARKS :-55   DURATION:- 150 MINUTES

INSTRUCTIONS:

(1)All questions are compulsory; however question numbers 16, 21, 26 and 27 have internal choice.

(2) Section-A consists of   9 questions of 1 mark each.

Section-B consists of   10 questions of 2 marks each.

Section-C consists of   6 questions of 3 marks each.

Section-D consists of   2 questions of 4 marks each.

(3) Every question should be attempted only once.

(4) Use of calculator is not permitted, however logarithmic table will be provided on request.

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Section-A

Q1. The α and β forms of glucose differ in the configuration of the hydroxyl group at the_____ atom. (1)

- first carbon
- second carbon
- third carbon
- fourth carbon

Q2. The radius of La^{3+}(Z=57) is 106 pm. The value close to the radius of Yb^{3+} (Z=70) is_____   (1)

- 108pm
- 86 pm
- 106 pm
- 102pm

Q3. An aromatic compound A on treatment with aq.NH_3 followed by heating forms compound B. Compound B on heating with Br_2 and alc.KOH forms compound C having molecular formula C_6H_7N.

The compound A is _____.   (1)

- C_6H_5COOH
- C_6H_5CHO
- $C_6H_5COCH_3$
- C_6H_5COCl

Q4. When compound A is subjected to acid hydrolysis and then heated with Soda lime it gives 2-methyl propan-2-ol as one of the major products . Therefore compound A is _____.   . (1)

- 3-Hydroxy-3-methylbutanenitrile
- 2-Hydroxybutanenitrile
- 2-Hydroxy-2-methylpropanenitrile
- 3-Hydroxybutanenitrile

Q5. The addition polymer/s from the following : Teflon, Bakelite, Nylon 6 and Polyacrylonitrile is /are --
.   (1)

- Teflon only
- Teflon and Polyacrylonitrile
- Teflon and Bakelite
- Nylon 6 and Polyacrylonitrile

Q6. From the compounds o-methylphenol and benzyl alcohol which one will not react with NaBr and H_2SO_4?
.   (1)

Q7. Draw a neat labeled diagram to illustrate metal excess defect due to anionic vacancies   .   (1)

Q8. From the given reduction potentials of element X and Y, select the element which can protect iron from corrosion. Give a scientific reason to support your answer.   .   (1)
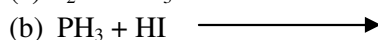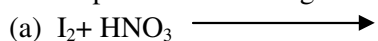
(Given $E^o Fe^{2+}/Fe$ = -0.44V , E^o_X = -1.66V and E^o_y = -0.14V)

Q9. Write chemical equation to show the preparation of Nylon 6,6.   (1)

Section-B

Q10. A solution of glycerol ($C_3H_8O_3$) in water was prepared by dissolving X g of glycerol in 500 g of water. The solution has a boiling point of 100.42^{o}C . Calculate the mass of glycerol used to make the solution. ($K_b H_2O$ = 0.52K kg mol^{-1} ; At. mass(u) C=12, H=1, O=16)   (2)

Q11. Complete the following chemical reactions
   (a) I_2+ HNO_3 $\longrightarrow$
   (b) PH_3 + HI $\longrightarrow$ (2)

Q12. Twenty two grams of ethyl acetate is hydrolysed in the presence of dilute HCl. If the rate constant of this reaction is 2.303x10^{-4}min^{-1},calculate the time required to hydrolyse 19.8g of ethyl acetate.   (2)

Q13. A solution is prepared by mixing cyclohexane and ethanol. Name the type of deviation from Raoult's law exhibited by the above solution and give its graphical representation.   (2)

Q14. (a).Why doFerromagnetic substances make better permanent magnets?
   (b). Atoms of element Y form hcp lattice and those of element X occupy 2/3rd of the tetrahedral voids. Write the formula of the compound formed by the elements X and Y.   (2)

Q15. Name the following:-
   (a).The polysaccharide which is stored in the liver of animals.
   (b).Structure of protein which remains intact even after denaturation.
   (c).The nucleic acid which is responsible for protein synthesis.
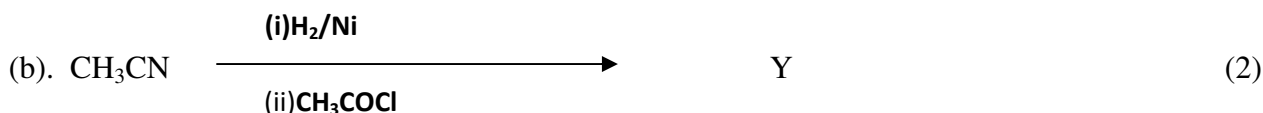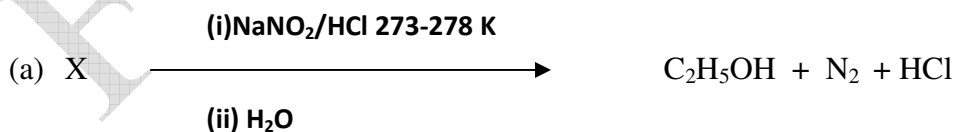   (d).The water soluble vitamin which can be stored in our body.   (2)

Q16. Write the equation and name of the major product formed, when a compound with molecular formula C_7H_8 reacts with bromine in the presence of Fe.   (2)

OR

A hydrocarbon with molar mass 72g/mol on photochlorination gives a single monochloro and two types of dichloro derivatives. Write any one equation and name the reactant and product/s.

Q17. Write the structures and names of X and Y in the following reactions:

(i)NaNO$_2$/HCl 273-278 K

(a) X $\longrightarrow$ C_2H_5OH + N_2 + HCl

(ii) H$_2$O

(i)H$_2$/Ni

(b). CH_3CN $\longrightarrow$ Y   (2)

(ii)CH$_3$COCl

Q18 A reaction is second order with respect to reactant X. How will the rate of the reaction be affected if the concentration of the reactant X is reduced to half of its initial value .Derive the unit for the rate constant of this reaction.   (2)

Q19. Give reasons for the following :-
   (a).Detergents with straight chain hydrocarbons are preferred over branched chain hydrocarbons
   (b).Diabetic patients are advised to substitute sucrose with saccharin.   (2)

Section-C
12

Q20   Draw a neat labelled diagram to show preparation of silver sol. Define sorption and electro osmosis

(3)

Q21. Draw a neat labelled diagram of a dry cell.

For the following cell, calculate the concentration of Zn^{2+} ions, if its e.m.f is 1.0 V at 298K.
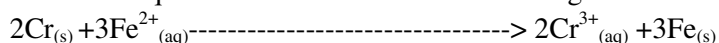
$Zn_{(S)}|Zn^{2+}_{(aq)} || Cu^{2+}_{(0.1M)}|Cu(s)$

The standard e.m.f of the cell is 1.1 V. (3)

OR

Illustrate the process of corrosion with the help of a neat labelled diagram.

Calculate the equilibrium constant for the following reaction at   298K

$2Cr_{(s)} +3Fe^{2+}_{(aq)}$------------------------------> $2Cr^{3+}_{(aq)} +3Fe_{(s)}$

(Given E^o $Cr^{3+}|Cr = -0.74V$ and E^o $Fe^{2+}|Fe = -0.44V$)

Q22. Write the IUPAC name of the complex $[Al(OH)_2(H_2O)_4]NO_2$. Using the concept of valence bond theory deduce the hybridization scheme of the outer spin complex ion $[Mn(H_2O)_6]^{2+}$. Comment on its magnetic property. (3)

Q 23. Draw a neat labelled diagram of the refining process used to obtain high purity gallium. (3)

State the significance of the following in metallurgical processes:

(a)NaCN during the froth floatation process.

(b)Graphite electrode in the electrolytic cell during the extraction of aluminium by Hall – Heroult process.

Q24. Answer the following: (3)

(a) Write the general chemical equation for the reaction of lanthanoids with $H_2 0$

(b) Why transition metals and their compounds act as good catalysts?

(c) Draw the structure of the dichromate ion. (3)

Q25. Write chemical equations to show what happens when:

(a) Propene is subjected to acid catalysed hydration.

(b) Anisole is treated with HI.

(c) Sodium phenoxide is treated with carbon dioxide followed by acid hydrolysis. (3)

Section-D

Q26. Attempt the following:

(a) Draw the structure of H_3PO_2.

(b) Why fluorine does not exhibit any positive oxidation state?

(c) What is the importance of helium in diving apparatus?

(d) Write chemical equation to show the complete hydrolysis of XeF_6. (4)

OR

Attempt the following:

(a) Draw the structure of BrF_3.

(b) Arrange the hydrides of group 16 elements in the increasing order of their thermal stability.

(c) Why does ozone act as a powerful oxidizing agent?

(d) Write chemical equation to show the thermal decomposition of sodium azide.

Q27. Answer the following:

(a) Write labelled chemical equation to show what happens when benzaldehyde reacts with acetaldehyde in the presence of dilute base and the product is then heated.

(b) Write chemical equation to show how dry ice can be converted to propanoic acid.

(c) A reactant gave cumene after undergoing Clemmensen reduction. Write the name and formula of the reactant.

(d) Write the structure of the product formed in the following reaction. (4)

$$O_2N - \!\!\left\langle\!\bigcirc\!\right\rangle\!\! - CH_3 \quad \xrightarrow[ii)H_2O,373K]{i)\,UV/Cl_2}$$
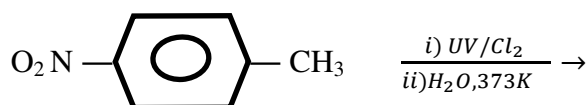
OR

Answer the following:

13

(a) Write labeled chemical equation to show what happens when 2,2dimethylpropanal reacts in the presence of conc. NaOH.

(b) A Compound after undergoing Hell-Volhard Zelinsky reaction gave bromophenylacetic acid . Write the formula and the name of the reactant.

(c) Write labeled equation to show the conversion of ethanenitrile to   acetone

(d) Write the structure of the product formed in the following reaction:
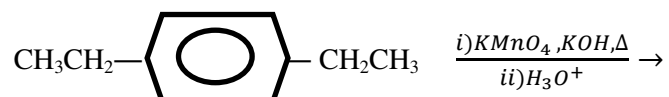
$$CH_3CH_2 - \bigcirc - CH_2CH_3 \quad \xrightarrow[ii)H_3O^+]{i)KMnO_4,KOH,\Delta}$$

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
QUESTION WISE ANALYSIS AND BLUE PRINTOF CHEMISTRY PAPER(FROM 2017-18)

EXAMINATION:-BOARD   CLASS:-XII   MAX MARKS:-55   DURATION:-150 MINUTES

	Q.NO	UNIT NO	MARKS	MCQ	VSA	SA-I	SA-II	LA	K	U	S	A	EASY	AVE	DIF	DURATION MINUTES
						FORM		100%	OBJECTIVES			100%	DIFFICULTY LEVEL		100%	
TOTAL	25		55	4	5	20	18	8	17	22	6	10	17	26	12	140
%				7%	9%	36%	33%	15%	31%	40%	11%	18%	31%	47%	22%	
	1	14	1	1					1				1			2
	2	8	1	1						1				1		2
	3	13	1	1								1			1	4
	4	12	1	1								1			1	4
	5	15	1		1					1			1			2
	6	10	1		1					1				1		3
	7	1	1		1						1		1			3
	8	3	1		1					1				1		3
	9	15	1		1				1				1			3
	10	2	2			2						2		2		5
	11	7	2			2			2					2		4
	12	4	2			2						2		2		4
	13	2	2			2			2					2		5
	14	1	2			2				2			2			5
	15	14	2			2			2				2			4

16	10	2			2						2	2			5
17	13	2			2				2			2			5
18	4	2			2				2			2			5
19	16	2			2				2		2				6
20	5	3				3		2		1	3				7
21	3	3				3				1	2	1		2	7
22	9	3				3			3			3			8
23	6	3				3		2		1		3			8
24	8	3				3		2		1	2	1			8
25	11	3				3			3			3			8
26	7	4					4	3		1	1	3			10
27	12	4					4		4					4	10