GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
(A Corporate Statutory Body Constituted by an Act of State Legislature)
ALTO BETIM – GOA 403 521

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GBSHSE/ACAD/2012/1857 Date. 16th July, 2012

To,
The Heads of all recognised
Higher Secondary Schools,
within the jurisdiction of this Board.

Sub: Evaluation Scheme/Design of question paper of Std. XII – 2012 – 13 in Psychology/ Mathematics/Practicals

Sir/Madam,

With reference to the subject cited above kindly note the changes made in the Evaluation Scheme / Design of Question Paper for the following subjects of Std XII for this Academic year 2012 – 13.

1. **Psychology:** Design of Question paper – Mid Term – 20 marks
   Weightage to concept / Subject units
   At Sr. No. 2: pages 32 to 46 may be deleted, for 1st Mid Term Test 2012.

2. **Mathematics:** Design of the Question Paper – Second Term – 80 marks
   Weightage to learning outcomes.

S. No	Learning outcomes	Marks	% of Marks
1.	Knowledge	20	25%
2.	Understanding	36	45%
3.	Application	20	25%
4.	Skill	04	05%
	Total	80	100%

3. **Practical subjects**: viz Physics, Chemistry, Biology and Computer Science;
   ADDENDUM:
   Refer Circular No. 19 dated 25th April 2012 in respect of Internal Assessment and its weightage in H.S.S.C. Examination to be conducted by the Board in March 2013.
   - 20 marks for Assignment /Project will be as follows:
     a. 10 marks will be allotted for project work and same shall be added to practical component.
     b. 10 marks will be allotted for assignment on theory and it shall be added to the theory component.

   You are requested to bring to the notice of all concerned.

sd/-
(Bhagirath G. Shetye)
Secretary

Enclosures:
1. Pattern and design of the question paper for Mid Term, 1st Term, 2nd Tern and Final Exam of Physics and Chemistry.
2. Clarification regarding syllabus of practical in Physics and Chemistry.

PATTERN AND DESIGN OF THEORY QUESTION PAPERS (2012-2013 ONWARDS) PHYSICS

	MID TERM TEST		FIRST TERM		SECOND TERM		FINAL	
TIME	60 MIN		150 MIN		150 MIN		150MIN	
MAX MARKS	20		60		60		55	
NO OF QUESTIONS	2		6		6		5	
WEIGHTAGE TO OBJECTIVES	Knowledge: 40 %\ Understanding: 50 % Application : 10 %		Knowledge: 30 %\ Understanding: 50 % Application : 20 %		Knowledge: 30 %\ Understanding: 50 % Application : 20 %		Knowledge: 30 %\ Understanding: 50 % Application : 20 %	
WEIGHTAGE TO CONTENT	Electric Charges and Fields Electrostatic Pot and Capacitance Current Electricity Electromagnetic waves	05 05 08 02	Electric Charges and Fields Electrostatic Pot and Capacitance Current Electricity Moving Charges and Magnetism Electromagnetic waves Magnetism and Matter Ray Optics and Optical Instruments Wave Optics Dual Nature of Matter and Rad.	05 05 08 10 02 06 11 08 05	Electromagnetic Induction Alternating Current Atoms Nuclei Semiconductor Electronics: Communication Systems Moving Charges and Magnetism Magnetism and Matter Ray Optics and Optical Instrmts Wave Optics Dual Nature of Matter and Rad.	06 10 09 07 12 04 02 01 04 02 03	Electric Charges and Fields Electrostatic Pot and Capacitance Current Electricity Moving Charges and Magnetism Magnetism and Matter Electromagnetic Induction Alternating Current Electromagnetic waves Ray Optics and Optical Inst Wave Optics Dual Nature of Matter and Rad Atoms Nuclei Semiconductor Electronics: Communication Systems	04 04 06 05 03 02 04 02 06 04 02 03 02 06 02
WEIGHTAGE TO TYPE OF QUESTIONS	LA(4mks) SAII (3 mks) SAI (2 mks) VSA (1mks)	04 06 06 04	LA (4 mks) SAII(3 mks) SAI (2 mks) VSA (1mks)	08 18 22 12	LA (4 mks) SAII (3 mks) SAI (2 mks) VSA (1mks	08 18 22 12	LA (4 mks) x 2 SAII (3 mks) x 5 SAI (2 mks) x 11 VSA (1mks) x 10	08 15 22 10
SCHEME OF OPTIONS	NO OPTIONS		OPTIONS IN TWO LA TYPE + 1 SAII TYPE		OPTIONS IN TWO LA TYPE + 1 SAII TYPE		OPTIONS IN TWO LA TYPE + 1 SAII TYPE = 20 %	
DIFFICULTY LEVEL	Easy 30% Average 60% Difficult 10%		Easy 30% Average 60% Difficult 10%		Easy 30% Average 60% Difficult 10%		Easy 20% Average 60% Difficult 20%	

PRACTICALS

FIRST TERM 20 MKS (BASED ON EXPTS AND ACTIVITIES PERFORMED DURING THE TERM)

1 Expt (to be performed during the exam)	10 mks
Record of 4 Activities	04 mk
Viva on Activities/Expts	02 mk
Journal	04 mks

Break Up of Marks to be awarded for Expt:		Break Up of Marks to be awarded for Journal	
Setting/ Diagram	03 mks	Completeness	02 mks
Observations	04 mks	Neatness	01 mks
Calculations/Graph	02 mks	Regularity	01mks
Result	01 mks		

SECOND TERM 20 MKS (BASED ON EXPTS AND ACTIVITIES PERFORMED DURING THE TERM)

1 Expt (to be performed during the exam)	10 mks
Record of 4 Activities	04 mk
Viva on Activities/Expts	02 mk
Journal	04 mks

Break Up of Marks to be awarded for Expt:		Break Up of Marks to be awarded for Journal	
Setting/ Diagram	03 mks	Completeness	02 mks
Observations	04 mks	Neatness	01 mks
Calculations/Graph	02 mks	Regularity	01mks
Result	01 mks		

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

ALTO BETIM – GOA 403521

CLASS: XII SUBJECT:CHEMISTRY

PATTERN AND DESIGN OF QUESTION PAPERS (2012-2013 ONWARDS)

		MID TERM TEST	FIRST TERM	SECOND TERM	FINAL
TIME IN MINS		60	150	150	150
MAX MARKS		20	60	60	55
NO OF MAIN QUESTIONS		2	6	6	5
WEIGHTAGE TO OBJECTIVE	KNOWLEDGE	6	18	18	17
	UNDERSTANDING	9	24	24	21
	APPLICATION	3	12	12	11
	SKILL	2	6	6	6
WEIGHTAGE TO CONTENT	THE SOLID STATE	4	4		3
	GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS	3	3		3
	CHEMISTRY IN EVERYDAY LIFE	3	3		2
	CHEMICAL KINETICS	5	5		4
	HALOALKANES AND HALOARENES	5	5		3
	SURFACE CHEMISTRY		8	2	3
	ELECTROCHEMISTRY		8	3	4
	THE *d*-AND *f*-BLOCK ELEMENTS		9	3	4
	ALCOHOLS,PHENOLS AND ETHERS		8	2	3
	BIOMOLECULES		7	2	3
	SOLUTIONS			8	4
	THE *P*-BLOCK ELEMENTS			10	6
	COORDINATION COMPOUNDS			8	3
	ALDEHYDES, KETONES AND CARBOXYLIC ACIDS			10	5
	AMINES			7	3
	POLYMERS			5	2
WEIGHTAGE TO TYPE OF QUESTIONS	VSA	3	10	10	10
	SA I	10	30	30	22
	SA II	3	12	12	15
	LA	4	8	8	8
SCHEME OF OPTIONS					
DIFFICULTY LEVEL	EASY	20%	20%	20%	20%
	AVERAGE	60%	60%	60%	60%
	DIFFICULT	20%	20%	20%	20%

MARKS DISTRIBUTION FOR FIRST TERM PRACTICAL EXAM IN CHEMISTRY FOR STD. XII SC.

MAX. MKS : 20 MKS.	DURATION 2 HRS.
Q1. Volumetric Analysis	07 mks
Q2. Inorganic salt (container D)	07 mks
Q3. Functional Group determination (container F)	02 mks
Q4. Journal + Viva	02 + 02 mks

Marking scheme for Volumetric analysis and Inorganic salt analysis to be followed as earlier.

MARKS DISTRIBUTION FOR SECOND TERM PRACTICAL EXAM IN CHEMISTRY FOR STD. XII SC.

MAX. MKS : 20 MKS.	DURATION: 3 HRS.
Q1. Volumetric Analysis	06 mks
Q2. Physical Experiments	03 mks
Q3. Journal + Viva	01+01 mk.
Q4. Inorganic salt analysis (container D)	06 mks
Q5. Natural organic compound (container E)	01 mk
Q6. Functional Group determination (container F)	02mks

NOTE: The second term practical Examination also includes investigatory project carrying 10 mks

Marks for the project to be allotted as follows:

1. Neatly hand written project	05 mks
2. Oral presentation	03 mks
3. Viva on Project	02 mks

NOTE: Marking scheme for Volumetric analysis and Inorganic salt analysis will be like that of the Final Examination.

MARKS DISTRIBUTION FOR FINAL PRACTICAL EXAM IN CHEMISTRY FOR STD. XII SC

MAX. MARKS: 25	DURATION: 3HRS.
Q1. Volumetric Analysis	06mks
Q2. Physical Experiment	03mks
Q3. Journal + Viva	01 +02 mks
Q4. Inorganic salt (container D)	06 mks
Q5. Functional Group determination (container F)	02 mks
Q6. Identification of natural organic compound (container E)	01 mk
Q7. Project + Viva	02+02 mks

Marking scheme

Q1. Volumetric analysis	06 mks
Observation	01 mk
Correct volume of stock solution	01 mk
Readings	03 mks
Calculations	01 mk as follows:

i) Calculations of N/M of solution in container B using $N_1V_1 = N_2V_2$ or $a_1 m_1 v_1 = a_2 m_2 v_2$ ½ mk

ii) Percentage purity of the solution in container B _____ g of which have been dissolved per _____ml ½mk

Note: Calculations should be either in terms of normality or molarity throughout.

Q4. Inorganic salt analysis (container D)		06 mks
Dry tests		2 ½ mks
Cation		2mks as follows
Group separation	01 mk	
Identification of cation	½ mk	
C.T	½ mk	

Anion	01mk as follows	
Identification		½ mk
C.T		½ mk
Correct formula of the compound		½ mk

Internal Examiner shall evaluate

Q1.	06mks
Q2.	03 mks
Q3.	01+ 2 mks
Total	**12 mks**

External Examiner shall evaluate

Q4	06 mks
Q5	02 mks
Q6	01 mk
Q7	02 +02 mks
Total	**13 mks**

Clarification Regarding Syllabus of Practical's In Chemistry For Std XII Science For The Academic Year 2012-2013.

With respect to **sets (A), (B), (C), (D) & (E)** following experiments are to be performed and evaluated for Board Exam.

1. Preparation of lyophilic sol of starch
2. Study of role of emulsifying agent (soap) on stabilizing (o/w) emulsions of:
   i. Mustard Oil.
   ii. Castor Oil
   iii. Coconut Oil.
3. Effect of concentration on the rate of reaction between sodium thiosulphate and HCL.
4. Enthalpy of neutralisation of strong acid (HCL) and strong base (NaOH).

From **sets D & E** the following experiments are to be demonstrated only:

1. Variation of cell potential in $Zn|Zn^{2+} || Cu^{2+} | Cu$ with a change in concentration of electrolytes ($CuSo_4$ or $ZnSo_4$) at room temperature.
2. Separation of pigments from extracts of leaves by paper chromatography and determination of R_f values.

From **sets F and G** following preparation are to be demonstrated only:

1. Preparation of double salt of ferrous ammonium sulphate - (1^{st} term).
2. Preparation of Acetanilide - (2^{nd}term).

With respect to **set J** students will be required to prepare standard solution from the stock solution provided to them (as done earlier).

With respect to **set K** compounds of As^{3+} are not to be given.

III. GALVANIC CELL

Introduction : Electrochemical cells can be used to convert chemical energy into electrical energy by the chemical reactions taking place at the two electrodes in the cell.

It is an oxidation reduction reaction in the cell which produces electric current. For this purpose the oxidising and reducing reagents are to be kept separate so that the electron transfer occurs through a conducting wire. The development of the potential at the electrode depends on temperature and concentration.

The electrochemical cell which converts chemical energy into electrical energy is called a galvanic or voltaic cell after Galvani (1780) who invented the cell. A typical galvanic cell is the Daniel cell.

Theory : A galvanic cell can be constructed by taking two electrodes, zinc and copper, and dipping them in their respective salt solutions of the same strength, i.e. $ZnSO_4$ and $CuSO_4$, and connecting the two solutions by a salt bridge and the two electrodes by a conducting wire when the current flows from zinc to copper as long as the circuit is closed. The reactions taking place at the zinc and copper electrodes are as follows :

At the Zinc electrode :

$Zn_{(s)} \text{ ----> } Zn^{2+}_{(aq)} + 2e^-$ (half cell oxidation reaction)

Zinc has a greater tendency to ionise than copper since zinc is placed higher than copper in the Electrochemical series and hence it leaves its electrons on the zinc electrode and goes as Zn^{++} ions in its salt solution rendering the zinc electrode negative. Since the electrons are lost to the copper electrode, Zinc electrode is the anode and the process occurring at this electrode is oxidation.

At the copper electrode :

$Cu^{2+}_{(aq)} + 2e^- \text{ ----> } Cu_{(s)}$ (half cell reduction reaction)

The electrons released by the zinc atoms pass to the copper electrode where the Cu^{++} ions from the solution pick up these electrons and are discharged at the copper electrode, making this electrode positively charged and as such the copper electrode is the cathode and the process occuring at this electrode is reduction.

The overall cell reaction = half cell oxidation reaction + half cell reduction reaction which is written as :

$$Zn_{(s)} + Cu^{2+}_{(aq)} \text{ ------> } Zn^{2+}_{(aq)} + Cu_{(s)}$$

represented as $^{-}Zn\backslash Zn^{2+}\backslash\backslash Cu^{2+}\backslash Cu^{+}$
(1M) (1M)

Where E_{cell} = 1.1 volts at 25°C when the concentrations of the two salt solutions are 1 M.

Electromotive force of a cell (E_{cell}) :

Current flows from one electrode to the other due to the difference in potential between the two electrodes. The flow of current from the electrode of higher potential to the electrode of lower potential causes this difference in potential which is called the electromotive force of a cell (emf) and is expressed in volts.

Experiment :

Aim : To set up a simple galvanic cell and determine its emf using salt solutions of three different concentrations and to find the change of emf with time.

Principle : Since the potential of an electrode depends upon concentration, the emf of the cell will change with different concentrations of the salt solutions and decrease with time.

Apparatus : 2 beakers (100 ml), salt bridge, filter paper strip, connecting wires, sand paper, high resistance voltmeter, 2 pinch-cocks, potentiometer.

Materials and chemicals : Zinc strip, copper strip, zinc sulphate, copper sulphate, distilled water, sulphuric acid, filter paper.

Procedure : Prepare 200 ml. of 1 M and 0.1 M solutions of $CuSO_4$ and $ZnSO_4$ respectively, and pour 50 ml. of each of the solutions separately into two 100 ml. beakers, and prepare three sets of the above solutions as shown in the observation table below. Clean properly the zinc and copper strips with sand paper, wash them with water and dip them in the $ZnSO_4$ and $CuSO_4$ solutions, respectively. Connect the solutions in the two beakers by a salt bridge or a filter paper saturated with KCl solution. Connect the two strips, copper and zinc, by an electric wire which acts as an external circuit in which is inserted a key and a high resistance voltmeter or a potentiometer. The whole apparatus is to be arranged as shown in the Fig. 3.1.

Use the first set of solutions. Press the key to complete the electrical circuit. On pressing the key a deflection is observed in the voltmeter. Take the voltmeter reading and record it at regular intervals of time (every 5 minutes) as shown in the observation table. Repeat the experiment such that the cell potential values and their change at regular intervals of time is recorded for the other two sets.

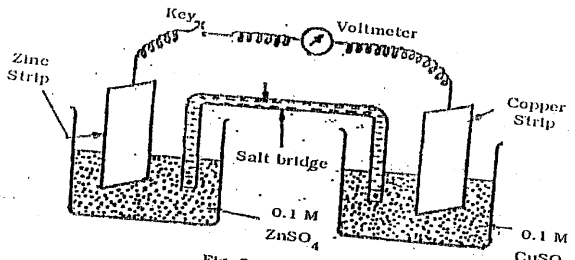

Fig. 3.1 - A Daniel Cell

Observations :

Sr. No.	Concentrations of Solutions	Cell Potential	Voltmeter reading for time in minutes			
			0	5	10	15
1.	1M $ZnSO_4$ and 1M $CuSO_4$					
2.	0.1M $ZnSO_4$ and 0.1 M $CuSO_4$					
3.	0.1 M $ZnSO_4$ and 1 M $CuSO_4$					

Note : Different concentrations of $ZnSO_4$ and $CuSO_4$ may also be considered in the experiment.

Calculations :

1) $E^o_{cell} = E^o_{cathode\ (RHC)} - E^o_{anode\ (LHC)}$

$= E^o_{Cu^{2+}/Cu} - E^o_{Zn^{2+}/Zn}$

$= +0.34\ V - (-0.76\ V)$

$= +1.10V$ at 298^oK

2) $E_{Cell} = E^o_{Cell} - \frac{2.303RT \text{ Log } Q}{nF}$

Now $\log Q = \dfrac{[Zn^{2+}][Cu]}{[Cu^{2+}][Zn]} = \dfrac{[Zn^{2+}]}{[Cu^{2+}]}$ Since [Cu] = [Zn] = 1

$= \dfrac{0.1}{0.1} = 1$

$\therefore$ $\log Q = 1$, n = 2. $E^{o}_{Cell} = +1.10$ Volts

and log 1 = 0

T = Room temperature

$\therefore$ $E_{cell} = E^{o}_{cell} - \dfrac{2.303 \times 8.3143 \times T \times 0}{2 \times 96,500}$

$\therefore$ $E_{cell} = E^{o}_{cell}$

$= + 1.10$ V

3] $Q = \dfrac{(Zn^{2+})}{(Cu^{2+})} = \dfrac{0.1}{1.0} = 10^{-1}$ $\therefore$ $\log Q = \log 10^{-1} = -1$

$\therefore$ n = 2, $E^{o}_{cell} = + 1.10$ V and T-Room temperature

$\therefore$ $E_{cell} = E^{o}_{cell} - \dfrac{2.303\ RT \log Q}{n\ F}$

$= E^{o}_{cell} - \dfrac{2.303 \times 8.3143 \times T \times (-1)}{2 \times 96,500}$

$=$ X Volts

Result : The emf of the cell is $-$ V.

The cell potential depends on the concentration of the solutions and decreases with time.

Precautions : i) The terminals of the connecting wires and those of the electrodes, voltmeter, key should be cleaned with sand paper.

ii) Zinc and copper rods should be cleaned properly before dipping them in their respective solutions.

iii) The connections should be tightly fixed and should be checked before pressing the key.

Object. To compare the effectiveness of a number of oils in forming the emulsions.

Theory. Not all oils form emulsions with water with the same ease using the same emulsifier. The extent of emulsification depends upon the nature of oil and the nature of emulsifier used.

Apparatus required. Measuring cylinder 25 mL (one), Graduated pipette 10 mL (four), Stop watch (one), Test tubes (eight).

Reagents required. Four different oils e.g., Mustard oil, Cotton seed oil, Castor oil, and Kerosene oil, 1% solution of sodium oleate (soap solution).

Procedure. This experiment may be performed in two parts.

(*i*) **When oil is in larger proportions.** In this case, the resulting emulsion is water-in-oil (W/O) type.

(*ii*) **When water is in larger proportions.** In this case the resulting emulsion is oil-in-water (O/W) type.

Preparation of Water-in-oil (W/O) Emulsion

Pipette out 5 mL of each oil in a separate test tube, label each test tube and arrange them on a test tube stand. Add 2 mL of distilled water and 0.5 mL of 1% soap solution to each test tube. Shake the contents of each tube thoroughly and place it back on the test tube stand. Observe and record the time taken by each system for breaking into two layers, in the following table. The emulsion taking longer time for separating into oil and water is more stable. Each oil can thus be rated in terms of time its emulsion takes for breaking up into two layers.

Preparation of Oil-in-water (O/W) Emulsion

Pipette out 2 mL of each oil separately in test tubes. Label them all. Add 5 mL of distilled water and 0.5 mL of 1% soap solution to each test tube. Shake the contents of each test tube well and place them on a test tube stand.

Observe and record the time taken by the emulsion to break up i.e., separates into two layers. Rate each oil according to the time taken by each system. The most stable emulsion takes the longest to separate into layers. The corresponding oil thus is easily emulsified.

Observations.

Temperature = ... °C

Test tube no.	*Name of the oil*	*Time taken for the separation of two layers, minutes*	*Rating of the oil*
		For case (i): W/O emulsion	
1	Mustard oil	t_1	.....
2	Cotton seed oil	t_2	.....
3	Castor oil	t_3	.....
4	~~Kerosene oil~~ Coconut oil	t_4	.....
		For case (ii) : O/W emulsion	
1	Mustard oil	t'_1	.....
2	Cotton seed oil	t'_2	.....
3	Castor oil	t'_3	.....
4	~~Kerosene oil.~~ Coconut oil	t'_4	.....

Results. The rating of the oils on the basis of the stability of the emulsions formed is,

For case (*i*) ..... oil ..... oil ..... oil ..... oil

For case (*ii*) ..... oil ..... oil ..... oil ..... oil

Discussion. Try to correlate the rating of the oils with their structures.

Precautions. (*i*) Shaking of the contents of each test tube should be done for the same period of time, and with almost similar force.

(*ii*) Breaking up time of an emulsion should be the time taken by an emulsion to separate completely into two layers.

Experiment 3.2

Object. To compare the effectiveness of various emulsifying agents in stabilizing emulsions.

Theory. The emulsifying capacity of an emulsifier is governed by its tendency to lower down the interfacial tension between the dispersed phase and the dispersion medium. Obviously, it is related to its structural parameters like chain–length, nature of functional group and that of the oil. The hydrocarbon end of the emulsifier is oil-soluble and the ionizable group gets oriented towards water. Thus, an emulsifier forms a layer around the droplets of the dispersed phase and prevents coalescence of the dispersed phase.

Experiment 5.2

Object. To investigate the separation of the coloured components present in a given flower/grass extract by paper chromatography. Determine their R_f values.

Theory. Flowers and grass contain certain highly coloured pigments. These pigments can be extracted with acetone. The extract can be concentrated by leaving the extract in a china dish, when the volatile solvent evaporates.

The mixture of pigments is then allowed to get partitioned between immobile and mobile phases. Due to difference in their adsorption characteristics, different pigment molecules travel with different speeds when made to migrate on chromatographic paper.

Apparatus required. Same as in Experiment 5.1.

Reagents required. Flowers or grass, Petroleum ether, Acetone, Filter paper no.1, and the Solvent (a mixture of petroleum ether and acetone in the ratio 3:1).

Procedure. Grind the flower or grass with acetone in a pastle and mortar, till the coloured components get extracted. Filter the solution and preserve it in a corked test tube. Cut a filter paper strip of suitable dimensions, draw a pencil line about 3 cm from the lower edge, and put a cross (×) near at the middle of the line. With the help of a fine capillary, place a drop of the flower/grass extract (obtained above) at the cross mark. Let the spot dry up. Place another drop of this extract at the same place. Dry it in air. Pour the solvent into the jar so as to form a layer of about 2-3 cm height. Clip the upper end of the filter paper into the hook so that the lower end just dips into the solvent. Cover the jar and let the solvent move up. Remove the filter paper strip from the jar as soon as liquid rises to a height of about 20 cm.

Mark the solvent front with a pencil. Dry the filter paper in air and mark the coloured spots with a pencil. Measure the distance of each spot and that of the solvent front from the base-line. Record your observations and calculate the R_f values for each component.

Observations and calculations. Temperature = t°C
Distance of solvent front from the base line = p cm

Sr.no.	*Colour of the spot*	*Distance moved, cm*	R_f
1	Blue	x	x/p
2	Green	y	y/p
3	Red	z	z/p

Results. The R_f values calculated above, follow the order
..... > ..... > .....
Hence, ... pigment molecules move fastest, and that of the ..... pigment slowest.

12.3 PREPARATION OF ACETANILIDE

Acetanilide is an acetyl derivative of aniline. Its molecular formula is $C_6H_5NH.COCH_3$.

Experiment 12.3

Object. To prepare a sample of acetanilide.

Apparatus required. Round bottomed flask (100 mL), Reflux condenser, Measuring cylinder (25 mL), Beakers and funnel.

Reagents required.

Aniline	5 mL
Acetic anhydride	5 mL
Glacial acetic acid	5 mL
Zinc dust	1 g
Animal charcoal	1 g

Theory. Acetanilide can be obtained by acetylation of aniline using acetic anhydride in glacial acetic acid at refluxing temperature.

Reaction.

$$\underset{\text{aniline}}{C_6H_5NH_2} + \underset{\text{acetic anhydride}}{(CH_3CO)_2O} \xrightarrow{\text{heat}} \underset{\text{acetanilide}}{C_6H_5NH.CO.CH_3} + CH_3COOH$$

Procedure. Take 5 mL of aniline in a clean dry round bottomed flask (100 mL). To it, add slowly a mixture containing 5 mL each of acetic anhydride and glacial acetic acid. After complete addition, add 1 g of zinc dust and fit up the flask with a reflux condenser. Reflux it for about 10 minutes on a sand bath.

Remove the condenser and pour the hot reaction mixture in 100 mL of cold water (taken in a 250 mL beaker). *Care should be taken not to allow zinc dust to pass into the beaker.* Stir the mixture thoroughly with a glass rod. Colourless crystals of acetanilide separate out. Filter the crystalline material on a Buchner funnel under suction, and dry the material on filter paper pads.

Purification by recrystallization. Transfer the crude sample of acetanilide to a 250 mL beaker. Add 100 mL of boiling water and 5 drops of ethyl alcohol. Boil the solution to obtain a clear solution. Add 1 g of animal charcoal, boil for a minute and filter the hot solution. Allow the filtrate to cool. Shining crystals of acetanilide separate out. Filter these crystals on a Buchner funnel under suction. Dry the crystals between the folds of the filter paper. Determine the melting point of the purified and dried sample.

Results.

Total yield of the crude sample	= ..... g
Colour of the crude sample	= .....
Colour of the recrystallized sample	= .....
Melting point of the recrystallized sample	= .... °C

Precautions. (*i*) If possible, the freshly distilled aniline should be used.

(*ii*) While transferring the contents of the flask into water taken in a beaker, care should be taken not to allow zinc dust to pass into the beaker.

Fig. 1.6. Drying of the crystals, (*a*) pressing between [illegible] (*b*) in a dessicator.

Experiment 1.1

Object. To prpare a crystalline sample of ferrous ammonium sulphate (Mohr's salt), $FeSO_4.(NH_4)_2SO_4.6\ H_2O$.

Theory. When a saturated aqueous solution containing equimolar amounts of ferrous sulphate and ammonium sulphate is cooled, crystals of Mohr's salt are obtained. The crystalline material corresponds to a stoichiometry represented by the formula $FeSO_4.(NH_4)_2SO_4.6H_2O$. These crystals have a light green colour.

Stoichiometry. The stoichiometric equation and the relative amounts of various salts involved in this preparation are,

$$FeSO_4.7H_2O + (NH_4)_2SO_4 + x\ H_2O \rightarrow FeSO_4.(NH_4)_2SO_4.6H_2O + x'\ H_2O$$

1 mole	1 mole	1 mole
[56+32+64+(7x18)]	[2(14+4)+32+64]	[56+32+64+2(14+4)+32+64+6(2+16)]
278 g / mol	132 g / mol	392 g / mol

Thus, for preparing 392 g of the Mohr's salt, one would need 278 g of $FeSO_4.7H_2O$ (ferrous sulphate heptahydrate) and 132 g of $(NH_4)_2SO_4$. In order to prepare a certain desired amount of the Mohr's salt, say W g, the relative amounts of the two constituent salts can be calculated as follows, viz.,

$$\text{Mass of } FeSO_4.7H_2O = \frac{278 \times W}{392}\ \text{g}$$

$$\text{Mass of } (NH_4)_2SO_4 = \frac{132 \times W}{392}\ \text{g}$$

Thus, for preparing a 10 g sample of the Mohr's salt, one would need as follows:

$$\text{Mass of } FeSO_4.7H_2O \text{ required} = \frac{278 \times 10}{392} = 7.1\ \text{g}$$

$$\text{Mass of } (NH_4)_2SO_4 \text{ required} = \frac{132 \times 10}{392} = 3.4\ \text{g}$$

Apparatus required. 3 Beakers 100 mL, Porcelain (china) dish (3"diameter), Glass funnel, Glass rod, and an ice bath.

Reagents required. Ferrous sulphate (heptahydrate) crystals = 7 g
Ammonium sulphate = 3.5 g
Dil. sulphuric acid = 1-2mL

Procedure. Boil about 40-50 mL of distilled water in a beaker. In another beaker, place the required amounts of ferrous sulphate and ammonium sulphate, and add 2 mL of dil.H_2SO_4. Now, add boiling water in small amounts to the beaker containing the two salts while continuously stirring the contents. The contents of the beaker may be heated to nearly boiling, and if there is still some salt left undissolved, then add a little more warm distilled water from the other beaker and stirr it well to dissolve the salts completely. Filter the hot solution through a filter paper cone, and collect the filtrate in the china dish. Heat the contents of the china dish gently to concentrate the solution up to crystallization point.

To check the crystallization point, one end of the glass rod is dipped into the solution in the china dish and cooled in air by blowing air on to it. If fine crystals appear at the end of the glass rod, the china dish is removed from the tripod stand and allowed to cool in air. After some fine crystals have appeared, the china dish is placed in an ice-bath. When the crystallization is complete, the mother liquor is drained off, and the crystals in the china dish are washed with a very fine spray of ice cold water-ethyl alcohol mixture. The china dish is then kept slanting so that the excess of water gets drained out. The semi-dry crystals are then dried by pressing them gently between the folds of filter papers. The dry crystals are then weighed, and a sample is scaled in a polythene pack. The packet is then stapled in your record book.

Results. The practical yield of the Mohr's salt is ..... gram.

The colour of the Mohr's salt crystals is ..... (light green)

The shape of the Mohr's salt crystals is ..... (monoclinic)

Percentage yield. Since, it is not always possible to recover the stoichiometric amount of the salt from the solution by crystallization, hence success of any preparation is judged from the *percentage yield*, which is defined as,

$$\text{Percentage yield} = \frac{\text{Experimental yield in grams}}{\text{Stoichiometric (expected) yield in grames}} \times 100$$

Precautions. (*i*) Do not use too much of the solvent while preparing the saturated solution of the salt(s).

(*ii*) Do not boil the solution for a long.

(*iii*) Do not concentrate the solution too much.

(*iv*) Cooling of the saturated solution should be slow.

(*v*) During drying, do not press the crystals hard.

Points to Remember. (*i*) Sulphuric acid is added to prevent th hydrolysis of ferrous ion.

(*ii*) Boiling the solution for a long time results in partial oxidation

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
(A Corporate Statutory Body Constituted by an Act of State Legislature)
ALTO BETIM – GOA 403 521

Website:www.gbshse.gov.in email:goaboard@dataone.in Phone (0832) 2417593

GBSHSE/ACAD/ 2012/ 1492 Date: 20-06-2012

To,

The Heads of all recognised Higher Secondary Schools,
within the jurisdiction of this Board.

Sub:- Distribution of portion in Marathi Lang. I, Marathi Lang.II, Konkani Lang.II, Hindi Lang.II Urdu Lang.II & Sanskrit Lang for II for Std XII.

Sir/Madam,

This is in continuation of the circular no.21 dated 26th April, 2012. Please find enclosed herewith the Distribution of portion in Marathi Lang. I, Marathi Lang.II, Konkani Lang.II, Hindi Lang.II, Urdu Lang.II & Sanskrit Lang for II Std XII.

The contents of the letter may be brought to the notice of the Teachers concerned.

Yours faithfully,

(Dr. Thomas Mathew)
Joint Secretary

Encl: As above

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

DISTRIBUTION OF PORTION

Subject :- MARATHI Lang. I Std XII

First – Mid Term Portion
गद्य 1,2
पद्य 1,9
शब्दांच्या जाती
विरुध्दार्थी
शुद्धलेखन
उतारा

First –Term Portion
गद्य 1,2,4,5,6,7,8,9
पद्य 1 संत काव्य (ख) (ग) 5,7,8,10,13
स्थलवाचन 1,2,3,4
शब्दांच्या जाती , विरुध्दार्थी, विरामचिन्हे , शुद्धलेखन, वाकप्रचार ,
वृत्तान्तलेखन, पत्रलेखन, म्हणी, निबंध
उतारा ,रूपग्रहण

Second –Term Portion
गद्य 11,12,13,14
पद्य संत काव्य (ख) (ग) 4,8,11
स्थलवाचन 5,6,7
शब्दांच्या जाती , विरुध्दार्थी, विरामचिन्हे , शुद्धलेखन, वाकप्रचार ,
वृत्तान्तलेखन, पत्रलेखन, म्हणी, निबंध
उतारा ,रूपग्रहण

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

DISTRIBUTION OF PORTION

Subject :- SANSKRIT Lang. II Std XII

Term wise portion distribution

A. First midterm examination (20 marks)

1. Text – Lessons from 1 to 3

2. Grammar- सन्धिः, समासः (अव्ययीभावः, तत्पुरुषः, कर्मधारयः, द्वन्द्वः), पर्यायवाचिनः, शब्दरूपाणि, धातुरूपाणि, टाप्, कारकम्, प्रश्ननिर्माणम्

3. Non – Textual

Short notes on 1. वैदिकसाहित्यम् 2. डॉ. श्री. भा. वर्णेकरः 3. भासः

अपठितगद्यस्य अनुवादः

4. संवादपूर्तिः

B. 1st Terminal Examination (80 marks)

1. Text- Lesson from 1 to 6

2. Grammer- सन्धिः, समासः (अव्ययीभावः, तत्पुरुषः, कर्मधारयः, द्वन्द्वः, द्विगुः, बहुव्रीहिः), पर्यायवाचिनः, शब्दरूपाणि, धातुरूपाणि, टाप्,ङीप्, ठक्, तल्, कारकम्, प्रश्ननिर्माणम्, कालपरिवर्तनम्, प्रयोगः

3. Non – Textual

Short notes on 1. वैदिकसाहित्यम् 2. डॉ. श्री. भा. वर्णेकरः 3. भासः 4. कालिदासः, 5. अम्बिकादत्तव्यासः

अपठितगद्यस्य अनुवादः, अनुच्छेदाधारिताः प्रश्नाः

4. चित्रवर्णनम्, पत्रलेखनम् , संवादपूर्तिः

C.II terminal Examination (80 marks)

Text- lessons from 7 to 10

Core content- 20 % of the First Terminal Portion (1 Prose & 1 poetry)

Grammer- सन्धिः, समासः (अव्ययीभावः, तत्पुरुषः, कर्मधारयः, द्वन्द्वः, द्विगुः, बहुव्रीहिः), पर्यायवाचिनः, शब्दरूपाणि, धातुरूपाणि, टाप्,ङीप्, ठक्, तल्, मतुप्, कारकम्, प्रश्ननिर्माणम्, कालपरिवर्तनम्,वचनपरिवर्तनम्, वाक्यसंशुद्धिः, प्रयोगः

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

DISTRIBUTION OF PORTION

Subject :- HINDI Lang. II इ.स. XII

परीक्षा/अंक	गद्य पाठ क्रमांक	पद्य पाठ क्रमांक	व्याकरण	रचना
मध्य सत्र परीक्षा 20	1) हीरों का हार 2) बाजार दर्शन	1) गुरू महिमा 2) दिन जल्दी जल्दी ढलता है।	विशेषण ① भाववाचक ① कालपरिवर्तन ② उपसर्ग ①	संवाद लेखन ④ पत्रलेखन ③
20	05	03	05	07

परीक्षा/अंक	गद्य पाठ क्रमांक	पद्य पाठ क्रमांक	व्याकरण	रचना
प्रथम सत्र परीक्षा 80	1) हीरो का हार 2) i) ग्राम विभाजन और जाति प्रथा ii) मेरी कल्पना का आदर्श समाज 3) बाजार दर्शन 4) नमक 5) पहलवान की ढोलक वितान सिल्वर जुबिली ⑤	1) गुरू महिमा 2) दिन जल्दी जल्दी ढलता है। 3) सूर के पद 4) राधेय 5) रक्षा 6) छोटा मेरा खेत बच्चुलों के पंख	मुहावरे ④ काल परिवर्तन ② उपसर्ग ② कारक ② भाववाचक संज्ञा ② विशेषण ③ वाक्य शुद्ध ② करना विरुद्धार्थी शब्द ②	संवाद लेखन ⑤ प्रतिवेदन ⑤ पत्रलेखन ⑤ परिच्छेदपर ⑤ प्रश्न निबंध लेखन ⑥
80	16	16	20	28

परीक्षा/अंक	गद्य पाठ क्रमांक	पद्य पाठ क्रमांक	व्याकरण	रचना
द्वितीय सत्र परीक्षा 80	2) बाजार दर्शन 3) नमक 4) पहलवान की ढोलक 5) काशी मेरा पानी दे 6) देश का नून और किशोरी बाबू वितान धूप ⑧	1) मीरा के पद 2) i) छोटा मेरा खेत ii) बच्चुलों के पंख 3) कैमरे में बंद अपाहिज 4) पतंग 5) रक्षा	मुहावरे ④ काल परिवर्तन ② उपसर्ग ② कारक ② भाववाचक संज्ञा ② विशेषण ③ वाक्य शुद्ध करना ② विरुद्धार्थी शब्द ②	संवाद लेखन ⑤ प्रतिवेदन ⑤ पत्रलेखन ⑤ परिच्छेदपर ⑤ प्रश्न निबंध लेखन ⑨
80	16	16	20	28

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

DISTRIBUTION OF PORTION

Subject :- URDU Lang.II Std XII

First Mid Term Exam (20 Marks)											
Prose			Poetry			Grammar			Composition		
①	گزرا ہوا زمانہ	۱	①	حمد	۱	①	واحد = جمع	۱	④	مکالمہ	۱
①	عقاب	۲	①	غزل (۱)	۲	①	جملے صحیح	۲	④	نیوز/رپورٹ	۲
③	مفتی صاحب	۳	①	برکھارت	۳	①	معنی	۳			
						①	زمانے	۴			
05			03			04			08		

First Term Exam (80 Marks)											
Prose			Poetry			Grammar			Composition		
③	کمار بکاؤ ہے۔	۴	①	غزل (۲)	۴	③	فعل	۵	⑥	عبارت	۳
④	باتیں ہماری ہیں۔	۵	③	خاک ہند	۵	②	واحد/جمع	۶	⑤	کہانی	۴
③	مامتا	۶	①	غزل (۳)	۶	②	جملے صحیح	۷	⑤	نیوز/رپورٹ	۵
③	جلتی ہیں حیات	۷	②	ٹکٹ	۷	③	زمانے	۸	⑤	خط	۶
③	انکل فرینکی	۸	①	غزل (۴)	۸	②	معنی	۹	⑤	مکالمہ	۷
④	دو بیل	۹	①	غزل (۵)	۹	②	محاورے	۱۰	⑧	مضمون	۸
			③	امن کا دیپ	۱۰						
20			12			14			34		

Second Term Exam (80 Marks)											
Prose			Poetry			Grammar			Composition		
⑤	چیونٹی کا سفر	۱۰	②	نیا شہر	۱۱	③	فعل	۱	⑥	عبارت	۱
⑤	ڈاکٹر مختار	۱۱	③	غزل (۶)	۱۲	②	محاورے	۲	⑤	کہانی	۲
⑤	قومی اتحاد	۱۲	②	ترانۂ اردو	۱۳	②	واحد جمع	۳	⑤	نیوز/رپورٹ	۳
⑤	شعر کے مطالعے کے لیے پیمانے	۱۳	③	غزل (۷)	۱۴	②	جملے صحیح	۴	⑤	خط	۴
			②	سونامی	۱۵	②	معنی	۵	⑤	مکالمہ	۵
						③	زمانے	۶	⑧	مضمون	۶

20	12	14	34

Board Exam (Marks)			
Prose	Poetry	Grammar	Composition
20	12	14	34

1) Suggested Assignment / Project (any One)

۱	کاغذ اور قلم -
۲	مجھے بننا ہے ------
۳	رمضان عید -
۴	سالانہ کھیلوں کا مقابلہ -
۵	ناریل کے پیڑ کے آپ بیتی -

2) The criteria for the evaluation of the assignment should based on following :

۱	صحیح املا نویسی
۲	پیراگراف کے مناسب تقسیم
۳	بامعنی جملے اور قواعد کا صحیح استعمال
۴	عنوان سے ربط
۵	زبان کی سلاست اور روانی

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Subject :- KONKANI Lang.II Std XII

Konkani Language II distribution of portion for 1st Mid Term

गद्य 1, 2, 3
पद्य 1 2
व्याकरण -- भाववाचक, विशेशणां, उरफाटी उतरा
रचना - वृत्तांत, संवादलेखन

DISTRIBUTION OF PORTION FOR 1st TERMINAL EXAM 4290

पाठ — विशय — वट्ट गुण → ८०

गद्य — २०

1. आडरां जुन
2. सात जाण मावल्याली भाचो
3. दिपकावणी
4. जाणटे आमकां देवासमान
5. वेळ्यावयली रैलंपरां
6. श्रम महात्म्य
7. सान जालो म्हान डॉ. अब्दुल कलाम

पद्य — 12

1. शीमरें गांय
2. तांड चेडवा बुडकुलें
3. आयज तूं येतलो देवून
4. लेकी
5. मुल्लां

व्याकरण — २०

* कुसानत्या सुचोवणेप्रमाण बदल करून बरयात.
  आज्ञार्थी, त्यकारी, नत्यकारी, काळ,
  विभक्ती प्रत्यय, उतरां शुध्द करून बरयात
  प्रश्नार्थी, क्रियापदांचीं फावो तें रूप वापरप
* भावनामां
* विशेशणां
* उरफाट्या अर्थाचीं उतरां
* म्हणी वाक्प्रचार ओपारी

रचना — २८

वृत्तांत / वाक्ी
निमंत्रण / आमंत्रण पत्रिका
उताऱ्यावयले प्रश्न
पत्र
अर्ज
संवाद
निबंध

INTERNAL ASSESSMENT SCHEME

KONKANI (S.L.)

C1288 C1288

REVISED FORMAT

DISTRIBUTION OF PORTION FOR SECOND TERMINAL EXAM

पाठ	विषय	वट्ट गुण → ८०
गद्य	① सोन जालो म्हण डॉ. अब्दुल कलाम	
	② कारवार	२०
	③ दोंगर चंवळ्ळा	
	④ सैमाकडेन इस्यागत	
	⑤ रचना एक कला	
	⑥ शिरशाय	
पद्य	① मुक्तो	
	② एक टोवेल	१२
	③ वसंत परतून आज परत	
	④ सगळें आता इतिहासजमा	
व्याकरण	* कंसातल्या सुचनेप्रमाण बदलून बरयात आज्ञार्थी, होयकारी, न्हयकारी, काळ विभक्ती प्रत्यय, उतरां शुद्ध करून बरोयात प्रश्नार्थी, क्रियापदांचे फावोतें रुप वापरप	२०
	* भाववाचकनामां	
	* विशेषणां	
	* उरफाटया अर्थाचीं उतरां	
	* म्हणी ओपारी वाक्प्रचार	
रचना	* वृतांत / बातमी	
	* निमंत्रण / आमंत्रण पत्रिका	२८
	* पत्र	
	* अर्ज	
	* संवाद	
	* निबंध	

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DISTRIBUTION OF PORTION

C1292

Subject :- MARATHI Lang. II Std XII

First – Mid Term Portion
पद्य 1,3
गद्य 1,3
अवांतर वाचन
व्याकरण
लेखन

First –Term Portion
पद्य 1,2,5,6,7,9,11
गद्य 6,7,10,11,12,13
व्याकरण : शब्दांच्या जाती, भाववाचक नामे , विरुद्धार्थी शब्द, विशेषण, वाकप्रचार लिंग बदला , वचन बदला,
लेखन – उता-याखालील प्रश्न, वृत्तान्तलेखन, कार्यक्रम पत्रिका, भाषण, संवादलेखण, निबंधलेखन

Second –Term Portion
पद्य 3,6,12,13 + 2020 1 3 2
गद्य 1,5,8,14 + 2020 1 3 3
व्याकरण : शब्दांच्या जाती, भाववाचक नामे , विरुद्धार्थी शब्द, विशेषण, वाकप्रचार लिंग बदला , वचन बदला,
लेखन – उता-याखालील प्रश्न, वृत्तान्तलेखन, कार्यक्रम पत्रिका, भाषण, संवादलेखण, निबंधलेखन