

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
CLASS: XI **SUBJECT: CHEMISTRY**

SCHEME OF EXAMINATION AND MARKS DISTRIBUTION (2017-2018 ONWARDS)				
		MID – TERM (AUG)	FIRST TERM (OCT-NOV)	SECOND TERM
DURATION IN MINUTES		60	150	150
MAXIMUM MARKS		20	55	55
NUMBER OF QUESTIONS		10	25 - 27	25 - 27
WEIGHTAGE TO OBJECTIVE	KNOWLEDGE		30% ±5%	
	UNDERSTANDING		40% ±5%	
	SKILL		10% +5%	
	APPLICATION		20% ±5%	
WEIGHTAGE TO CONTENT	1	SOME BASIC CONCEPTS OF CHEMISTRY	06	05
	2	STRUCTURE OF ATOM	08	07
	3	CLASSIFICATION OF ELEMENTS AND PERIODICITY OF PROPERTIES	06	05
	4	CHEMICAL BONDING AND MOLECULAR STRUCTURE		10
	5	STATES OF MATTER		09
	6	THERMODYNAMICS		07
	7	EQUILIBRIUM		07
	8	REDOX REACTIONS		07
	9	HYDROGEN		06
	10	s-BLOCK ELEMENTS		05
	11	p-BLOCK ELEMENTS		06
	12	ORGANIC CHEMISTRY-SOME BASIC PRINCIPLES AND TECHNIQUES		11
	13	HYDROCARBONS		12
	14	ENVIRONMENTAL CHEMISTRY		02
	15	CORE CONTENT(20%)		11
WEIGHTAGE TO TYPE OF QUESTIONS	MULTIPLE CHOICE QUESTION (MCQ) - --1MARK		02	4-5
	VERY SHORT ANSWER (VSA)-- 1MARK		02	3-4
	SHORT ANSWER I (SA I)--2MARKS		06	16-20
	SHORT ANSWER (SA II)--3MARKS		06	18-24
	LONG ANSWER (LA)-- 4MARKS		04	8

SCHEME OF OPTIONS

DIFFICULTY LEVEL	EASY:-30% ±5%	AVERAGE:-50% ±5%	DIFFICULT :-20% ±5%
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PRACTICAL, PROJECT AND ASSIGNMENT

PRACTICAL & PROJECT	FIRST-TERM PRACTICALS	SECOND-TERM PRACTICALS	ASSIGNMENT IN THE FIRST- TERM (THEORY COMPONENT)
VOLUMETRIC ANALYSIS	14	05	--
NATURAL ORG SUBSTANCE	02	--	--
INORGANIC COMPOUND	--	10	--
JOURNAL + VIVA	2+2	3+2	--
INVESTIGATORY PROJECT +VIVA	--	12+8	--
MAXIMUM MARKS	20	40	10
DURATION IN MINUTES	120	180	--

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
MODEL QUESTION PAPER OF MID TERM EXAMINATION
SUBJECT:-CHEMISTRY CLASS:-XI MAXIMUM MARKS :-20 DURATION:- 60 MINUTES

Instructions:-

- (1) All questions are compulsory however question 4 and 10 has internal choice.
- (2) Use of calculator is not permitted, however logarithmic table will be provided on request.
- (3) Every Question should be attempted only once.
- (4) 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.
- (5) $N_A=6.022 \times 10^{23}$, Planck's constant $=6.626 \times 10^{-34} \text{ J s}$

Section-A

Q1. The highly metallic element will have theElectronic configuration [1]

- ▶ 2,8,7
- ▶ 2,8,8,5
- ▶ 2,8,8,1
- ▶ 2,8,2

Q2. If 6.022×10^{20} molecules of a substance weigh 44 mg, then molar mass of the substance isg/mol [1]

- ▶ 4.4
- ▶ 44
- ▶ 440
- ▶ 0.44

Q3. Write the atomic number and electronic configuration of the element present in the third period and seventeenth group. [1]

Q4. Differentiate between 1 mol NaOH and 1M NaOH. (any one point). [1]

OR

Differentiate between molarity and molality (any one point).

Section-B

Q5. Calculate the uncertainty in the velocity of a cricket ball of mass 150 g, if the uncertainty in its position is of the order of 10^{-10} m. [2]

Q6. A block of metal Rhenium having dimensions 10 cm × 5 cm × 20 cm weighs 21.02 kg. Calculate the density of Rhenium in grams per cubic centimetre. [2]

Q7. How many significant figures are present in each of the following? [2]

- (a) 2.56×10^3
- (b) 0.00256
- (c) 13.420
- (d) 600

Section-C

Q8. With the help of a neat labelled diagram, explain the discovery of electron. [3]

Q9. Draw diagrams for 1s and 2s orbitals. Explain with the help of suitable examples stability of half filled and completely filled sub shells. [3]

Section-D

Q10. What are isoelectronic species? Give four examples of ions which are isoelectronic with argon. Arrange the examples given by you in the increasing order of their ionic radius. [4]

OR

Derive the group number, period and block of the element "X" with atomic number 39, from its electronic configuration.

THE END

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

EXAMINATION:-MID

CLASS:-XI

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	4	10	2	4	6	10	4	53
%				10%	10%	30%	30%	20%	20%	50%	10%	20%	30%	50%	20%	
	1	3	1	1						1				1		4
	2	1	1	1								1			1	4
	3	3	1		1							1			1	2
	4	1	1		1					1				1		3
	5	2	2			2						2			2	6
	6	1	2			2				2				2		5
	7	1	2			2				2				2		5
	8	2	3				3		2		1		2	1		7
	9	2	3				3		2		1		2	1		7
	10	3	4					4		4			2	2		10

MCQ=MULTIPLE CHOICE QUESTION

VSA=VERY SHORT ANSWER

SA=SHORT ANSWER

LA=LONG ANSWER

FROM 2017-18

SEAT NO:-

TABLE NO:-

Goa Board of Secondary & Higher Secondary Education
Alto, Betim – Goa
CHEMISTRY -XI SCIENCE (FROM JUNE 2017 ONWARDS)
First Terminal Practical Examination
MODEL QUESTION PAPER

Date:

Duration: 2 Hours

Session:

Max. Marks: 20

Instructions:

- 1) Write your Examination Seat number and laboratory table number on your answer book and question paper.
- 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, and E/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, Na =23, S=32, K=39.

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

Container A: _____ N/M solution of _____.

Container B: _____ Solution

Using the above solutions, determine N/M of the solution in container **B** and calculate the strength of the solution in container **B** in terms of **g per _____ mL**. Also Convert the N/M of solution **B** to M/N.

(14Marks)

Q.2. Identify the natural organic substance supplied to you in Container **E/F** bearing your table number.

(2 Marks)

Q.3. Journal + Viva

(2+2 Marks)

SEAT NO:-

TABLE NO:-

Goa Board of Secondary & Higher Secondary Education
Alto, Betim – Goa
CHEMISTRY -XI SCIENCE
Second Term Practical Examination(FROM JUNE 2017 ONWARDS)
MODEL QUESTION PAPER

Date:

Duration: 3 Hours

Session:

Max. Marks:40

Instructions:

- 1) Write your Examination Seat number and laboratory table number on your answer book and question paper.
- 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, and D 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, Na =23, S=32, K=39.

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

Container A: _____ g / _____ mL solution of _____.

Container B: Impure solution of _____

Using the above solutions ,determine:

i)N/M of the solution in container **B**.

ii)Calculate the percentage purity of the solution in container **B**, _____ g of which have been dissolved per _____ mL. **(05 Marks)**

Q.2. 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. **(10 Marks)**

Q.3. Journal + Viva

(3+2 Marks)

Q.4. Project + Viva

(12+8 Marks)

CHEMISTRY -XI SCIENCE
First Terminal Practical Examination (FROM JUNE 2017 ONWARDS)
Marking Scheme

- Q1 Volumetric Analysis (Acid-base titration): (14 Marks)**
- i) Observations : (Burette, pipette/conical flask, indicator, color change) (1Mark)
- ii) Chemical equation (1Mark)
- iii) Reading (7 Marks)
- ± 0.1 7 mks
 - ± 0.2 6 mks
 - ± 0.3 5 mks
 - ± 0.4 4 mks
 - ± 0.5 3 mks
 - ± 0.6 2 mks
- iv) Calculations: (5Marks)
- 1.Determination of N/M 2 mks
 - 2 Conversion of M/N 1 mk
 - 3 Strength 2 mks
- Q2. Natural Organic substance (2 Marks)**
- Q3. Journal and viva (Distribution of marks same as for the Board examination). (2+2 Marks)**

Second Term Practical Examination

- Q 1) Volumetric Analysis (Acid-base titration): (05 Marks)**
- i) Observations : (Burette, pipette/ conical flask, indicator, color change) (½Mark)
- ii) Reading (3 Marks)
- ± 0.1 3mks
 - ± 0.2 2 ½ mks
 - ± 0.3 2mks
 - ± 0.4 1 ½ mks
 - ± 0.5 1mk
- iv) Calculations: (1 ½ Marks)
- 1. Conversion of g/ V mL to M/N of Solution A ½ mk
 - 2. Determination of N/M of Solution B ½ mk
 - 3. Percentage purity of Solution B ½ mk
- Q2. Inorganic Qualitative analysis (10 Marks)**
- 1) Preliminary test /Dry test $\frac{1}{2} \times 8 = 4$ mks
 - 2) Wet test for anion: Correct anion (1½ mks)
C.T (1mk)
 - 3) Wet test for cation: Correct group (2mks)
Correct cation (½ mk)
C.T (½ mk)
 - 4). Correct formula (½ mk)
- Q3. Journal and viva (Distribution of marks same as for the Board examination). (3+2 Marks)**
- Q4. Project* and viva ** (12+8 Marks)**

*Distribution of marks same as for the Board examination.

**Four questions of two marks each.

GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
MODEL QUESTION PAPER OF FIRST TERM EXAMINATION
SUBJECT:-CHEMISTRY CLASS:-XI MAXIMUM MARKS :-55 DURATION:- 150 MINUTES

Instructions:-

1. All questions are compulsory; however question 8, 24, and 25 has internal choice.
2. Use of calculator is not permitted, however logarithmic table will be provided on request.
3. Every Question should be attempted only once.

Section-A consists of 7 questions of 1 mark each.

Section-B consists of 8 questions of 2 marks each.

Section-C consists of 8 questions of 3 marks each.

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

4. $N_A = 6.022 \times 10^{23}$;
At mass (u): H=1, C=12, O=16, S=32;
 $C = 3 \times 10^8 \text{ m/s}$

Section-A

Q1. The compound which has neither 2^0 nor 3^0 carbon atom/s is ----- . (1)

- Isobutene
- Pentane
- Isopentane
- Neopentane

Q2. From the following----- correctly represents 180g of H_2O . (1)

- i) 5 moles of H_2O
 - ii) 6.023×10^{23} molecules of H_2O
 - iii) 10 moles of H_2O
 - iv) 6.023×10^{24} molecules of H_2O
- (i) and (iii)
 - (ii) and (iii)
 - (ii) and (iv)
 - (i) and (iv)

Q3. For the elements O, C, F, Cl and Br the correct order of their increasing radii is ----- . (1)

- F, O, C, Cl, Br
- F, C, O, Cl, Br
- F, Cl, Br, O, C
- C, O, F, Cl, Br

Q4. The number of neutrons in deuterium is ----- . (1)

- 0
- 1
- 2
- 3

Q5. Write the group number, period and block of the element with atomic number 40. (1)

Q6. Using Lewis dot structures show the formation of HNO_3 molecule. (1)

Q7. Why it is not possible to cool a gas to absolute zero? (1)

Section-B

Q8. An organic compound on combustion gives 54.22% carbon and 9.2 % hydrogen. Calculate its empirical formula. (2)

OR

Calculate the molarity of a solution containing 49g of H_2SO_4 in 250 mL of the solution.

Q9. Calculate the frequency of yellow light emitted from a sodium lamp having wavelength of 580 nm. (2)

Q10. Write the atomic number and name of element whose outermost electronic configuration is $2p^3$. Name the type of orbital having quantum number $n=4, l=3, m=0$ & $s=\frac{1}{2}$ (2)

Q11. On the basis of VSEPR Theory draw the structures AB_5E and AB_3E_2 type of molecules and give an example of each. (2)

Q12. What is the main difference between boiling and evaporation? The compressibility factor (Z) for a gas is less than one. What does it signify? (2)

Q13. Give two points of differences between classical smog and photochemical smog. (2)

Q14. Arrange CaH_2 , BeH_2 and TiH_2 in the increasing order of their electrical conductance and LiH , NaH and CsH in the increasing order of their ionic character. (2)

Q15. Out of 1M H_2SO_4 and 1N H_2SO_4 state, which is more concentrated and why? (2)

Section-C

Q16. Explain any three postulates of Bohr's atomic model. (3)

Q17. State the trends in the electronegativity, metallic character and nature of oxides of elements, within a group and across a period. (3)

Q18. On the basis of hybridization explain the formation of C_2H_2 molecule. Draw its structure and comment on the type of hybridization. (3)

Q19. Graphically represent Maxwell Boltzmann distribution of molecular speeds at two different temperatures. Explain dipole-dipole forces of interaction with an example. (3)

Q20. Derive the ideal gas equation from the gas laws and name the terms involved in the equation. (3)

Q21. What is meant by 40 volume hydrogen peroxide solution. Calculate the strength in g/L of 20 volume solution of hydrogen peroxide. (3)

Q22. Write the IUPAC names of acetaldehyde, toluene and n-hexylchloride. (3)

Q23. Draw the bond line structures of tert-butylcyclohexane, 5-Methylhexa-1, 4-diene and 3,3-Diethylpentane (3)

Section-D

Q24.a) Name the type of hybridization observed in all the four carbon atoms of $\text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}_3$, numbered as per the IUPAC norms.

b) Explain 'polarity' with respect to H-F molecule. Draw diagrams showing, overlap of $2p_x$ atomic orbitals according to molecular orbital theory. (4)

OR

a) How many sigma (σ) and Pi (π) bonds are there in propyne? Draw the geometry of PCl_5 molecule.

b) Explain with an example of each for any two exceptions of the octet rule.

Q25. Check if the names (a) 1,1,2,2-Tetramethylethane; (b) 1-Methyl -6- ethyl cyclohexane; (c) 2-Isopropyl butane and (d) 1,2-Dimethyl- 1,2-dibromopropane are correct according to the IUPAC system of nomenclature, if not write the correct name. (4)

OR

Write the bond line formulae of: (a) 2-Dimethylheptane (b) 2-Methyl -4- ethylpentane

(c) 5-Ethyl- 5- chlorohexane and (d) 2-Isopropylpentane

Check if the name is correct according to the IUPAC system of nomenclature, if not write the correct name

THE END

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

EXAMINATION:-FIRST TERM

CLASS:-XI

MAX MARKS:-55

DURATION:-150 MINUTES

	Q.NO	UNIT NO	MARKS	FORM					OBJECTIVES				DIFFICULTY LEVEL			DURATION MINUTES
				MCQ	VSA	SA-I	SA-II	LA	100%	K	U	S	A	100%	EASY	
TOTAL	25		55	4	3	16	24	8	18	23	6	8	17	26	12	135
%				7%	5%	29%	44%	15%	33%	42%	11%	15%	31%	47%	22%	
	1	12	1	1						1				1		2.5
	2	1	1	1								1			1	3
	3	3	1	1						1				1		2.5
	4	9	1	1					1				1			2
	5	3	1		1							1			1	3
	6	4	1		1						1			1		2.5
	7	5	1		1					1				1		2.5
	8	1	2			2						2			2	6
	9	2	2			2						2			2	6
	10	2	2			2				2				2		5
	11	4	2			2					2			2		5
	12	5	2			2				2				2		5
	13	14	2			2				2				2		5
	14	9	2			2				2				2		5
	15	1	2			2				2				2		5

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

FROM 2017

- Q16 Account for the following giving scientific reasons:
 (a) Lithium iodide is covalent in nature.
 (b) Some amount of gypsum is added to cement. 2
- Q17 Write chemical equations for: (a) Preparation of diborane from sodium borohydride and (b) Reaction of silica with caustic soda. 2
- Q18 Complete the following reactions by writing structure of reactant / product.
 (a) Salicylic acid + sodium hydroxide $\xrightarrow[\text{- H}_2\text{O}]{\Delta, \text{CaO}}$ _____ 2
 (b) _____ $\xrightarrow[\text{(ii) H}_2\text{O, Zn dust}]{\text{(i) O}_3}$ Acetone + acetaldehyde
- Q19 Give a chemical test to distinguish between ethene and ethane. Write chemical equation/s involved. 2
- Section-C**
- Q20 (a) Write the condensed structural formula of 3-Ethyl-4-methylhex-5-enoic acid.
 (b) Write the IUPAC name of the compound: 3
-
- (c) Glucose and fructose have the same molecular formula, however glucose is known as aldohexose sugar while fructose is called ketohexose. Name the type of structural isomerism the two compounds exhibit.
- Q21 Rita boiled some water, poured it in a container and covered it. Name the type of system formed. What changes will occur within the system with respect to matter and energy?
 Calculate the maximum work that can be performed by a system at 300K and having equilibrium constant 10. (Given $R = 8.314 \text{ J/K/mol}$) 3
- OR**
- The standard enthalpies of formation of $\text{C}_2\text{H}_5\text{OH}(\text{l})$, $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{g})$ are -277.7 , -393.5 and -241.8 KJ/mol respectively. Calculate the enthalpy change for the complete combustion of one mole of ethanol. Predict the entropy change in (a) Iodine collected after the process of sublimation and (b) Melting of ice.
- Q22 (a) State any two applications of equilibrium constant.
 (b) Select the species from amongst the following which act as Lewis base/s:
 AlCl_3 , NH_3 , H_2O & H^+
 (c) During the precipitation of iron as $\text{Fe}(\text{OH})_3$, a little amount of ammonium chloride is added along with ammonium hydroxide. What is the role of ammonium chloride. 3
- Q23 Draw a neat labelled diagram of the electrochemical cell represented as:
 $\text{Cu}/\text{Cu}^{+2} // \text{Ag}^+/\text{Ag}$, and write the half cell reactions involved. 3
- Q24 (a) State any two properties signifying the diagonal relationship between lithium and magnesium.
 (b) Arrange the hydroxides of group 2 in the increasing order of their basic nature.
 (c) Name the process in which water is added to lime to break the lump of lime. 3
- Q25 Select the compound from the following set having the properties as indicated:
 (a) n-pentane, isopentane & neopentane ; having lowest boiling point.
 (b) Benzene, m-dinitrobenzene and toluene ; undergoes nitration easily.
 (c) Cyclohexane, benzene and cyclohexene ; undergoes electrophilic substitution easily. 3

Section-D

- Q26 a) With reference to group 13 elements define “inert pair effect” and state the nature of their oxides.
b) Write the name and formula of the compound known as “inorganic benzene”. Draw the structure of orthoboric acid.

4

OR

- a) With reference to group 14 elements define “catenation” and arrange their dihalides in the increasing order of their stability.
b) Draw the structure of silicate ion. Name the zeolite used to convert alcohol directly to gasoline.

- Q27 a) Write chemical equations to show the conversion of propene to 2,3-Dimethylbutane in **two** steps only.
b) Write labeled chemical equations to show what happens when bromoethene reacts with sodamide and the compound formed is passed through red hot iron tube at 873K.

4

OR

- a) Write chemical equations to show the conversion of phenol to acetophenone in **two** steps only.
b) Write labeled chemical equations to show what happens when butan-2-ol is heated with conc sulphuric acid and the compound formed is reacted with cold dil KMnO_4 solution

=====THE END=====

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

EXAMINATION:-FINAL EXAM

CLASS:-XI

MAX MARKS:-55

DURATION:-150 MINUTES

	Q.NO	UNIT NO	MARKS	FORM					OBJECTIVES				DIFFICULTY LEVEL			DURATION MINUTES
				MCQ	VSA	SA-I	SA-II	LA	100%	K	U	S	A	100%	EASY	
TOTAL	25		55	5	4	20	18	8	16	25	6	8	17	25	13	141
%				9%	7%	36%	33%	15%	29%	45%	11%	15%	31%	45%	24%	
	1	2*	1	1						1				1		2
	2	6	1	1					1				1			2
	3	7	1	1						1				1		2
	4	8	1	1					1				1			2
	5	13	1	1								1	1			2
	6	2*	1		1					1				1		2
	7	6	1		1						1		1			5
	8	7	1		1							1			1	3
	9	8	1		1					1				1		3
	10	1*	2			2						2		2		5
	11	4*	2			2					2		2			5
	12	5*	2			2				2				2		5
	13	6	2			2			2					2		5
	14	7	2			2				2			2			5
	15	8	2			2						2			2	5

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

*core content

FROM 2017