GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

ALTO -BETIM GOA 403521

FIRST INTERNAL TEST (2023-2024)

Subject: MATHEMATICS(E)- LEVEL 1 (REGULAR MATHEMATICS)

Time: 1Hour **CLASS: X** **Max. Marks: 20**

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to the Learning Objectives**

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1.	Knowledge	3	15%
2.	Understanding	9	45%
3.	Application	5	25%
4	Skill	3	15%
	TOTAL	**20**	100%

2. **Weightage to the different areas of Content**

Ch.no.	Name of the chapter	Marks
2	Polynomials	**5**
3	Pair of Linear Equations in Two Variables	**9**
6	Triangles	**6**
	Total	**20**

3. **Weightage to different form/type of Questions**

Sr. No.	Type of Questions	Marks for each question	Number of questions	Total Marks
1	Very Short Answer Type (VSA)	1	4	4
2	Short Answer Type (SA-I)	2	2	4
3	Short Answer Type (SA-II)	3	4	12
		Total	**10**	**20**

4. **Weightage to Difficulty Level of Questions**

Sr. No.	Estimated difficulty level of questions	Percentage
1	Easy	20%
2	Average	60%
3	Difficult	20%
	Total	**100%**

5. **Number of Questions:** There will be 10 questions

PATTERN OF SSC FIRST INTERNAL TEST QUESTION PAPER (2023-2024)

Subject: MATHEMATICS (E) LEVEL - 1 (Regular Mathematics)

Time: 1hr **Class X** **Max. Marks: 20**

Q. No.	Topic	Thrust areas	Type of Question	Weightage
1	Polynomials	Any Concept from Polynomials	VSA(MCQ)	**1 mk**
2	Triangles	Any Concept from Triangles	VSA(MCQ)	**1 mk**
3	Polynomials	• Given a graph of a (linear/quadratic) polynomial to identify the zero(s)**/** • To write a quadratic polynomial given sum and product of two zeroes**/** • To write a quadratic polynomial given two zeroes**/** • To find sum / product of zeroes of a quadratic polynomial	VSA	**1 mk**
4	Pair of Linear Equations in Two Variables	• Find the value of k for which the given pair of linear equations will have a unique solution or no solution or infinitely many solutions **/** • Find whether the given pair of linear equations are consistent or inconsistent**/** • If ax +by=m and bx +ay=n then find the value of x+ y or x-y	VSA	**1 mk**
5	Pair of Linear Equations in Two Variables	Write a pair of Linear equations in two variables for the given word problem.	SA I	**2 mks**
6	Triangles	Numerical Application on any one of the 4 theorems on Triangles	SA I	**2 mks**
7	Polynomials	• Divide p(x) by g(x) and find q(x) and r(x) and write in the form $p(x) = g(x) \times q(x) + r(x)$**/** • To find g(x) when p(x) ,q(x) and r(x) are given**/** • Given two zeroes find remaining two zeroes	SA II	**3 mks**
8	**#** Pair of Linear Equations in Two Variables	a) Find the solution of the pair of linear equations by Elimination method **OR** b) Find the solution of the pair of linear equations by Substitution / Cross multiplication method	SA II	**3 mks**
9	Triangles	• To prove a rider on Triangles**/** • Proof of any one theorem. (B.P.T./ Pythagoras Theorem/ converse of Pythagoras theorem)	SA II	**3 mks**
10	Pair of Linear Equations in Two Variables	Find solution of a pair of linear equations in two variables by graphical method.	SA II	**3 mks**
		# Internal choice to be provided		

FIRST INTERNAL TEST (2023-2024)

Subject: MATHEMATICS(E)- LEVEL 2 (Basic Mathematics)

Time: 1Hour **CLASS: X** **Max. Marks: 20**

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to the Learning Objectives**

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1.	Knowledge	3	15%
2.	Understanding	11	55%
3.	Application	3	15%
4	Skill	3	15%
	TOTAL	**20**	100%

2. **Weightage to the different areas of Content**

Ch.no.	Name of the chapter	Marks
2	Polynomials	5
3	Pair of Linear Equations in Two variables	9
6	Triangles	6
	Total	**20**

3. **Weightage to different form/type of Questions**

Sr. No.	Type of Questions	Marks for each question	Number of questions	Total Marks
1	Very Short Answer Type (VSA)	1	4	4
2	Short Answer Type (SA-I)	2	2	4
3	Short Answer Type (SA-II)	3	4	12
		Total	**10**	**20**

4. **Weightage to Difficulty Level of Questions**

Sr. No.	Estimated difficulty level of questions	Percentage
1	Easy	20%
2	Average	60%
3	Difficult	20%
	Total	**100%**

5. **Number of Questions:** There will be 10 questions

PATTERN OF FIRST INTERNAL TEST QUESTION PAPER (2023-2024)

Subject: MATHEMATICS (E) LEVEL - 2 (Basic Mathematics)

Time: 1hr **Class X** **Max. Marks: 20**

Q. No.	Topic	Thrust areas	Type of Question	Weightage
1	Polynomials	Any concept from Polynomials	VSA(MCQ)	**1 mk**
2	Triangles	Any concept from Triangles	VSA(MCQ)	**1 mk**
3	Polynomials	• Given a graph of a (linear/quadratic) polynomial to identify the zero(s)/ • To write a quadratic polynomial given sum and product of two zeroes/ • To write a quadratic polynomial given two zeroes/ • To find sum / product of zeroes of a quadratic polynomial	VSA	**1 mk**
4	Pair of Linear Equations in Two Variables	• Find the value of k, if x=a and y=b is a solution of the given Linear equation in two variables • If ax +by=m and bx +ay=n then find the value of x+ y or x-y	VSA	**1 mk**
5	Pair of Linear Equations in Two Variables	Attempt the following: i)Find the value of k for which the pair of Linear equations in two variables will have a unique solution or no solution or infinitely many solutions. ii)Find whether the pair of Linear equations in two variables are consistent or inconsistent	SA I	**2 mks**
6	Triangles	Numerical Application on any one of the 4 theorems on Triangles	SA I	**2 mks**
7	Polynomials	Divide a cubic polynomial p(x) by a linear polynomial g(x) and write the result in the form $p(x) = q(x) \times g(x) + r(x)$	SA II	**3 mks**
8	**#** Pair of Linear Equations in Two Variables	a) Find the solution of the pair of linear equations by Elimination method **OR** b) Find the solution of the pair of linear equations by Substitution method	SA II	**3 mks**
9	Triangles	Proof of any one theorem. • B.P.T.**/** • Pythagoras Theorem**/** • converse of Pythagoras theorem	SA II	**3 mks**
10	Pair of Linear Equations in Two Variables	Finding solution of a pair of linear equations in two variables by graphical method.	SA II	**3 mks**
		# Internal choice to be provided		

SECOND INTERNAL TEST (2023-2024)

Subject: MATHEMATICS(E)- LEVEL 1 (REGULAR MATHEMATICS)

Time: 1Hour **CLASS: X** **Max. Marks: 20**

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. Weightage to the Learning Objectives

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1.	Knowledge	3	15%
2.	Understanding	8	40%
3.	Application	6	30%
4	Skill	3	15%
	TOTAL	20	100%

2. Weightage to the different areas of Content

Ch.no.	Name of the chapter	Marks
4	Quadratic Equations	7
8	Introduction to Trigonometry	4
9	Some Applications of Trigonometry	3
10	Circles	3
11	Constructions	3
	Total	**20**

3. Weightage to different form/type of Questions

Sr. No.	Type of Questions	Marks for each question	Number of questions	Total Marks
1	Very Short Answer Type (VSA)	01	4	4
2	Short Answer Type (SA-I)	02	2	4
3	Short Answer Type (SA-II)	03	4	12
		Total	**10**	**20**

4. **Weightage to Difficulty Level of Questions**

Sr. No.	Estimated difficulty level of questions	Percentage
1	Easy	20%
2	Average	60%
3	Difficult	20%
	Total	**100%**

5. **Number of Questions:** There will be 10 questions

PATTERN OF SECOND INTERNAL TEST QUESTION PAPER (2023-2024)

Subject: MATHEMATICS (E) LEVEL - 1 (Regular Mathematics)

Time: 1hr **Class X** **Max Marks: 20**

Q. No.	Topic	Thrust areas	Type of Question	Weightage
1	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA(MCQ)	**1mk**
2	Quadratic Equations	Any concept from Quadratic Equations	VSA(MCQ)	**1 mk**
3	Introduction to Trigonometry	Trigonometric ratios of Complementary angles	VSA	**1mk**
4	Circles	Numerical Application	VSA	**1mk**
5	Circles	• Proof of Theorem 10.2**/** • Numerical Applications	SA-I	**2mks**
6	**#**Introduction to Trigonometry	a) Given a trigonometric ratio to find the value of other trigonometric ratio using k method **OR** b) Evaluate trigonometric expression using known trigonometric values of specific angles	SA-I	**2 mks**
7	**#**Quadratic Equations	a) Find roots of the quadratic equation by factorisation method **OR** b) Find roots of the quadratic equation by quadratic formula / completing square method	SA-II	**3mks**
8	Applications of Trigonometry	Word Problem with figure showing • two angles of elevation **/** • two angles of depression **/** • one angle of elevation and one angle of depression.	SA-II	**3mks**
9	Constructions	• Construct Similar triangles as per given scale factor**/** • To construct tangents to a circle from an external point(Ex 11.2)	SA-II	**3mks**
10	Quadratic Equations	• Word problem	SA-II	**3mks**
		# Internal choice to be provided		

SECOND INTERNAL TEST (2023-2024)

Subject: MATHEMATICS(E)- LEVEL 2 (BASIC MATHEMATICS)

Time: 1Hour **CLASS: X** **Max. Marks: 20**

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. Weightage to the Learning Objectives

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1.	Knowledge	3	15%
2.	Understanding	10	50%
3.	Application	4	20%
4	Skill	3	15%
	TOTAL	20	100%

2. Weightage to the different areas of Content

Ch.no.	Name of the chapter	Marks
4	Quadratic Equations	7
8	Introduction to Trigonometry	4
9	Some Applications of Trigonometry	3
10	Circles	3
11	Constructions	3
	Total	**20**

3. Weightage to different form/type of Questions

Sr. No.	Type of Questions	Marks for each question	Number of questions	Total Marks
1	Very Short Answer Type (VSA)	01	4	4
2	Short Answer Type (SA-I)	02	2	4
3	Short Answer Type (SA-II)	03	4	12
		Total	**10**	**20**

4. **Weightage to Difficulty Level of Questions**

Sr. No.	Estimated difficulty level of questions	Percentage
1	Easy	20%
2	Average	60%
3	Difficult	20%
	Total	**100%**

5. **Number of Questions:** There will be 10 questions

PATTERN OF SECOND INTERNAL TEST QUESTION PAPER(2023-2024)

Subject: MATHEMATICS (E) LEVEL - 2(Basic Mathematics)

Time: 1hr **Class X** **Max. Marks: 20**

Q. No.	Topic	Thrust areas	Type of Question	Weightage
1	Introduction to Trigonometry	Concept from Introduction to Trigonometry	VSA(MCQ)	**1mk**
2	Quadratic Equations	Concept from Quadratic Equations	VSA(MCQ)	**1 mk**
3	Introduction to Trigonometry	Trigonometric ratios of Complementary angles	VSA	**1mk**
4	Circles	Numerical Application	VSA	**1mk**
5	Circles	• Proof of Theorem 10.2**/** • Numerical Applications	SA-I	**2mks**
6	**#** Introduction to Trigonometry	a)Given a trigonometric ratio to find the value of other trigonometric ratio using k method **OR** b)Evaluate trigonometric expression using known trigonometric values of specific angles	SA-I	**2 mks**
7	Quadratic Equations	Find roots of the quadratic equation by Factorisation method	SA-II	**3mks**
8	Applications of Trigonometry	Problem with figure showing • an angle of elevation**/** • an angle of depression.	SA-II	**3mks**
9	Constructions	• Construct Similar triangles as per given scale factor**/** • To construct tangents to a circle from an external point	SA-II	**3mks**
10	Quadratic Equations	Find roots of a quadratic equation by using quadratic formula	SA II	**3mks**
		# Internal choice to be provided		

Third Internal Test (20marks)

(LEVEL 1-Regular Mathematics) and (LEVEL 2-Basic Mathematics)

INNOVATIVE TEST on any two /three chapters given below **or**

Presentation/Project/Assignment based on anyone of the following chapters

Ch.no.	Name of the chapter
6	Triangles
7	Co-ordinate Geometry
9	Some Applications of Trigonometry
13	Surface areas and Volumes
14	Statistics

PORTION FOR STD X - MATHEMATICS (LEVEL2)(Basic Mathematics)

Name of the Chapter	**Portion**
1)Real Numbers	whole topic is included for evaluation
2)Polynomials	a) Concept of a Polynomial, degree & types b) Zero of a Linear Polynomial ,Quadratic Polynomial- geometric meaning of the zeroes of a Polynomial, relationship between zeros and coefficients c)Finding a Quadratic Polynomial given sum and product of zeroes /zeroes d)To find the Quotient and remainder when a Cubic Polynomial is divided by a Linear polynomial and to express in the form: Dividend =divisor x Quotient +Remainder
3)Pair of Linear equations in Two variables	a) General form of a pair of linear equations in two variables b) Conditions for a pair of Linear equations in two variables to have-a unique solution, no solution, infinitely many solutions -finding the value of the unknown c)Find the solution of a pair of linear equations in two variables by (I) Elimination method (II)Substitution method (one equation should have coefficient of x and y as one) (III)Graphical method (one equation should have coefficient of x and y as one and the other equation should have coefficient of any one x or y as one)

4)Quadratic Equations	a) Concept of a Quadratic equation-standard form b) Finding the Roots of a Quadratic equation by (I)Factorisation method (II)Quadratic formula C)Nature of Roots based on discriminant
5)Arithmetic Progressions	a) Concept of an AP-first term, common difference b) Questions based on nth term, sum of n terms of an AP
6)Triangles	a) Concept of Similarity of Triangles-Tests for similarity of Triangles b) Concept of theorem on Areas of Similar Triangles (Proof not for evaluation) c)B.P.T., Pythagoras theorem and Converse of Pythagoras theorem (Proofs for evaluation) d)Numerical applications of the above 4 theorems
7)Coordinate Geometry	Concepts /Applications of (I) Distance Formula (II)Section Formula (III)Area of Triangle Formula
8)Introduction to Trigonometry	a) Concept of Trigonometry b) Trigonometric ratios and their relationships, k method c) Proving with the figure I) $Sin^2\theta+Cos^2\theta=1$ II) $1+Tan^2\theta= Sec^2\theta$ III) $1+Cot^2\theta= Cosec^2\theta$ d)Expressions involving Trigonometric ratios of some specific angles: 0^o, 30^o,45^o,60^o,90^o e) Trigonometric ratios of complementary angles

9)Some Applications of Trigonometry	a) Heights and Distances: Angle of Elevation and Angle of Depression b) Problems on heights and Distances. Problems should have only one right triangle with either angle of elevation or depression.
10)Circles	a) Concept of Tangent, Thm.10.1(proof not for Evaluation) Thm.10.2(with Proof) b)Numerical applications
11)Constructions	a) Construction of Tangents to a Circle from a point outside the circle b) Construction of Similar Triangles as per given scale factor. Note : Angles can also be drawn using a protractor
12)Areas Related to Circles	a) Perimeter and Area of a Circle b) Areas of Segment, Sector, Quadrant of a Circle and Semicircle c) Applications to find areas of shaded region involving two plane figures
13)Surface Areas and Volumes	Whole topic is included for evaluation
14)Statistics	a) Concept of Mean, Median, Mode b) To find Mean of grouped data by Direct method c)To find Mode of grouped data.
15)Probability	a) Concept of Theoretical Probability b) Probability of a Sure event and an Impossible event, $0 \leq P(E) \leq 1$, P (not E) c) Problems based on coins, Dice (only 1), playing cards, numbered cards, items in a box.

PORTION FOR STD X - MATHEMATICS (LEVEL 1)(Regular Mathematics)

a) Everything is included from ch. 1 to ch.15.

b) In the topic of Triangles, **Rider and numerical applications** based on the theorems will be tested.

c)In the topic of Constructions , a pair of compasses and ruler to be used to draw specific angles

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

ALTO-BETIM GOA 403521

DESIGN OF SSC FINAL EXAM QUESTION PAPER (2023-2024)

Subject : MATHEMATICS (E) - LEVEL 1 (Regular Mathematics)

Time : 2½ hrs **Class : X** **Max. Marks :80**

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The weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. Weightage to the Learning Objectives

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1.	Knowledge	10	12.5%
2.	Understanding	39	48.75%
3.	Application	21	26.25%
4.	Skill	10	12.5%
	Total	**80**	**100%**

2.Weightage to the different areas of Content

Chapter No.	Topic	Marks
1.	Real Numbers	**05**
2.	Polynomials	**05**
3.	Pair of Linear Equations in Two Variables	**10**
4.	Quadratic Equations	**07**
5	Arithmetic Progressions	**04**
6.	Triangles	**06**
7.	Coordinate Geometry	**04**
8.	Introduction to Trigonometry	**07**
9.	Some Applications of Trigonometry	**03**
10.	Circles	**04**
11.	Constructions	**06**
12.	Areas Related to Circles	**05**
13.	Surface Areas and Volumes	**05**
14.	Statistics	**07**
15.	Probability	**02**
	Total	**80**

3. Weightage to different form/type of Questions

Sr. No.	Form of Questions	Marks for each question	Number of questions	Total Marks
1.	Very Short Answer Type (VSA)	1	20	20
2.	Short Answer Type I (SA-I)	2	9	18
3.	Short Answer Type II (SA-II)	3	10	30
4.	Long Answer Type (LA)	4	3	12
	Total		**42**	**80**

4. The expected time for different type of questions would be as follows:

Sr.No.	Form of Questions	Approx. time for each question in mins (t)	Number of questions (n)	Approx. time for each form of questions in mins (t) x (n)
1.	Very Short Answer Type (VSA)	2	20	40
2.	Short Answer Type I (SA-I)	3	9	27
3.	Short Answer Type II (SA-II)	5.9	10	59
4.	Long Answer Type (LA)	8	3	24
	Total		**42**	**150**

5. Weightage to Difficulty level of questions:

Sr. No.	Estimated difficulty level of questions	Percentage
1.	Easy	20%
2.	Average	60%
3.	Difficult	20%
	Total	**100%**

6. Number of Questions:

There will be **42** questions

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

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BLUE PRINT OF SSC FINAL EXAM QUESTION PAPER (2023-2024)

Subject : MATHEMATICS (E) - LEVEL 1 (Regular Mathematics)

Time : 2½ hrs **Class : X** **Max. Marks :80**

Sr.No.	Objectives	Knowledge				Understanding				Application				Skill				
	Forms of Questions	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	
	Content / Marks	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	Total
1	Real Numbers	1(1)					21(2)				22(2)							3(5)
2	Polynomials					2(1), 3(1)		30(3)										3(5)
3	Pair of Linear Equations in Two Variables	4(1)				5(1), 17(1)		31(3)	*40(4)								*40(4)	5(10)
4	Quadratic Equations							32(3)					41(4)					2(7)
5	Arithmetic Progressions	6(1)						33(3)										2(4)
6	Triangles					7(1)	23(2)					34(3)						3(6)
7	Coordinate Geometry		24(2)				25(2)											2(4)
8	Introduction to Trigonometry	8(1), 9(1)					26(2)			10(1)	27(2)							5(7)
9	Some Applications of Trigonometry											35(3)						1(3)
10	Circles					11(1),18(1)	28(2)											3(4)
11	Constructions															36(3), 37(3)		2(6)
12	Areas Related to Circles	12(1), 19(1)										38(3)						3(5)
13	Surface Areas and Volumes					13(1), 14(1)						39(3)						3(5)
14	Statistics	15(1)					29(2)		*42(4)								*42(4)	3(7)
15	Probability					16(1),20(1)												2(2)
		8(8)	1(2)			11(11)	6(12)	4(12)	*2(8)	1(1)	2(4)	4(12)	1(4)			2(6)	*2(8)	
	TOTAL	9(10)				22(39)				8(21)				3(10)				42(80)

NOTE: Figures outside the bracket indicate the question number and figures within the bracket indicate marks .

***Indicates any one will be tested from that chapter

NOTE: Questions on Skill

i)If Solution by Graphical method is tested then Mean will be tested.

ii)If Ogive is tested then Word Problem on Pair of Linear Equations will be tested.

This is a model Blue print. Paper setter may make changes in the objectives chapter wise.

PATTERN OF SSC FINAL EXAM QUESTION PAPER (2023-2024)

Subject : MATHEMATICS (E) - LEVEL 1 (Regular Mathematics)

Time : 2½ hrs **Class : X** **Max. Marks :80**

General Instructions:

Read the following instructions very carefully and strictly follow them.

i) This question paper consists of **42** questions . All questions are **compulsory.**

ii) This question paper is divided into four Sections-**A, B, C** and **D**

iii) In **Section A**, Question Nos.**1 to 16** are multiple choice questions **(MCQs)** and Question Nos. **17 to 20** are very short answer type questions **(VSA)** of **1 mark** each.

iv) In **Section B** , Question Nos. **21 to 29** are short answer type I **(SA-I)** questions carrying **2 marks** each.

v) In **Section C**, Question Nos. **30 to 39** are short answer type II **(SA-II)** questions carrying **3marks** each.

vi) In **Section D** , Question Nos. **40 to 42** are long answer **(LA)** questions carrying **4marks** each.

vii) There is no overall choice . However an internal choice has been provided in **two questions** of **2marks** each in **Section B** and **two questions** of **3marks** each in **Section C**.

viii) In questions on Constructions , the drawing should be clear and exactly as per given measurements. The construction lines and arcs should also be maintained.

ix) Graph page is provided on the answer booklet.

x) Use of calculators and mathematical tables is not permitted.

Q No	Topic	Thrust areas	Type of Question	Weightage
Section A				
1	Real Numbers	Any concept from Real numbers	VSA(MCQ)	1mk
2	Polynomials	Any concept from Polynomials	VSA(MCQ)	1mk
3	Polynomials	Any concept from Polynomials	VSA(MCQ)	1mk
4	Pair of Linear Equations in Two Variables	Any concept from Pair of Linear Equations in Two Variables	VSA(MCQ)	1mk
5	Pair of Linear Equations in Two Variables	Any concept from Pair of Linear Equations in Two Variables	VSA(MCQ)	1mk
6	Arithmetic Progressions	Any concept from Arithmetic Progressions	VSA(MCQ)	1mk
7	Triangles	Any concept from Triangles	VSA(MCQ)	1mk
8	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA(MCQ)	1mk
9	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA(MCQ)	1mk
10	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA(MCQ)	1mk

11	Circles	Any concept from Circles	VSA(MCQ)	1mk
12	Areas Related to Circles	Any concept from Areas Related to Circles	VSA(MCQ)	1mk
13	Surface Areas and Volumes	Any question on Surface Areas	VSA(MCQ)	1mk
14	Surface Areas and Volumes	Any question on Surface areas	VSA(MCQ)	1mk
15	Statistics	Any concept from Statistics	VSA(MCQ)	1mk
16	Probability	Any concept from Probability	VSA(MCQ)	1mk
17	Pair of Linear Equations in Two Variables	• Find the value of k for which the given pair of linear equations will have a unique solution or no solution or infinitely many solutions **/** • Find whether the given pair of linear equations are consistent or inconsistent**/** • Write a pair of Linear equations in two variables for the given word problem.	VSA	1mk
18	Circles	Numerical problem	VSA	1mk
19	Areas related to Circles	• Find l(arc)**/** • ar(sector) (figure may be provided) (Do not substitute for π)	VSA	1mk
20	Probability	Find the probability of the given event	VSA	1mk
		Section B		
21	Real Numbers	• Prove $a \pm \sqrt{b}$ is irrational**/** • Find HCF of two numbers using Euclid's division lemma**/** • Without performing long division method, to find whether the given rational number is terminating or nonterminating and to write its decimal expansion.	SA-I	2 mks
22	Real Numbers	Word Problem (Application of HCF/LCM)	SA-I	2 mks
23	Triangles	Numerical application on any one of the 4 theorems on Triangles	SA-I	2 mks
24	Coordinate Geometry	Problem based on the concept of • Distance formula**/** • Section formula	SA-I	2 mks
25	**#**Coordinate Geometry	Using the Area of a triangle formula in Co-ordinate Geometry to find • a)area of a triangle OR • b) co-ordinate k of any one vertex OR • c) area of a special parallelogram (**Any two to be asked)**	SA-I	2 mks

26	#Introduction to Trigonometry	a) Given a trigonometric ratio, to find the value of the other trigonometric ratio using k method **OR** b) Evaluate trigonometric expression using known trigonometric values of specific angles	SA-I	2 mks
27	Introduction to Trigonometry	To prove a trigonometric identity	SA-I	2 mks
28	Circles	Numerical problem	SA-I	2mks
29	Statistics	• Find the mode **/** • median of grouped data	SA-I	2 mks
		Section C		
30	Polynomials	• Divide p(x) by g(x) and find q(x) and r(x) and write in the form $p(x) = g(x) \times q(x) + r(x)$**/** • To find g(x) when p(x) ,q(x) and r(x) are given**/** • given two zeroes find remaining two zeroes	SA-II	3 mks
31	#Pair of Linear Equations in Two Variables	a) Find the solution of the pair of linear equations by Elimination method **OR** b) Find the solution of the pair of linear equations by Substitution / Cross multiplication method	SA-II	3mks
32	#Quadratic Equations	a)Find roots of the quadratic equation by factorisation method **OR** b) Find roots of the quadratic equation by quadratic formula / completing square method	SA-II	3mks
33	Arithmetic Progressions	Question**/**Word problem -Sn, a_n, d, a	SA-II	3mks
34	Triangles	To prove a rider on Triangles	SA-II	3mks
35	Some Applications of Trigonometry	Word problem with figure showing • two angles of elevation**/** • two angles of depression **/** • one angle of elevation and one angle of depression.	SA-II	3mks
36	Constructions	Construct tangents to a circle from an external point.	SA-II	3mks
37	Constructions	Construct similar triangles as per given scale factor	SA-II	3mks
38	Areas related to circles	Find the area of a shaded region	SA-II	3mks
39	Surface Areas and Volumes	Word problem on concept of volume	SA-II	3mks

Section D				
40	Pair of Linear Equations in Two Variables	• Word problem **/** • Find solution of a pair of linear equations in two variables by graphical method.	LA	4mks
41	Quadratic Equations	Word problem	LA	4mks
42	Statistics	Find mean • by assumed mean method **/** • step deviation method **/** • Cumulative frequency curve (given 6 class intervals)	LA	4mks
# Internal choice to be provided				

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

ALTO – BETIM GOA 403521

DESIGN OF SSC FINAL EXAM QUESTION PAPER (2023 – 2024)

Subject: MATHEMATICS(E)-LEVEL 2 (BASIC MATHEMATICS)

Time: 2½ Hours **CLASS : X** **Max. Marks: 80**

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The Weightage or the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to the Learning Objectives**

Sr. No.	Learning Objectives	Marks	Percentage of Marks
1	Knowledge	12	15 %
2	Understanding	42	52.5 %
3	Application	16	20 %
4	Skill	10	12.5 %
	Total	**80**	**100 %**

2. **Weightage to the different areas of Content**

Chapter No.	Topic	Marks
1	Real Numbers	**05**
2	Polynomials	**05**
3	Pair of Linear Equations in Two Variables	**10**
4	Quadratic Equations	**07**
5	Arithmetic Progressions	**04**
6	Triangles	**06**
7	Coordinate Geometry	**04**
8	Introduction to Trigonometry	**07**
9	Some Applications of Trigonometry	**03**
10	Circles	**04**
11	Constructions	**06**
12	Areas Related to Circles	**05**
13	Surface Areas and Volumes	**05**
14	Statistics	**07**
15	Probability	**02**
	Total	**80**

3. **Weightage to different form/type of Questions**

Sr. No.	Types of Questions	Marks for each question	Number of questions	Total Marks
1	Very Short Answer Type (VSA)	1	20	20
2	Short Answer Type I (SA-I)	2	8	16
3	Short Answer Type II (SA-II)	3	12	36
4	Long Answer Type (LA)	4	2	08
		Total	**42**	**80**

4. The expected time for different type of questions would be as follows:

Sr. No	Form of Questions	Approx time for each question in mins (t)	Number of questions (n)	Approx. time for each form of questions in mins (t) × (n)
1.	Very Short answer Type (VSA)	2	20	40
2.	Short Answer Type I (SA-I)	3	8	24
3.	Short Answer Type II (SA-II)	6	12	72
4.	Long Answer Type (LA)	7	2	14
	Total		**42**	**150**

5. Weightage to Difficulty Level of Questions

Sr. No.	Estimated Difficulty level of Questions	Percentage
1	Easy	20 %
2	Average	60 %
3	Difficult	20 %
	Total	**100 %**

6. Number of Questions:

There will be **42** questions

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GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

ALTO-BETIM GOA 403521

BLUE PRINT OF SSC FINAL EXAM QUESTION PAPER (2023-2024)

Subject : MATHEMATICS (E) - LEVEL 2 (Basic Mathematics)

Time : 2½ hrs **Class : X** **Max. Marks :80**

Sr	Objectives	Knowledge				Understanding				Application				Skill				
No	Forms of Questions	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	VSA	SA I	SA II	LA	
	Content/marks	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	Total
1	Real Numbers	1(1)					21(2)											
							22(2)											3(5)
2	Polynomials	2(1)						29(3)										
		17(1)																3(5)
3	Pair of Linear Equations	3(1)				4(1)		30(3)									42(4)	
	in Two Variables					18(1)												5(10)
4	Quadratic Equations	5(1)						31(3)										
								32(3)										3(7)
5	Arithmetic Progressions	6(1)						33(3)										2(4)
6	Triangles							36(3)		7(1)	26(2)							3(6)
7	Coordinate Geometry		27(2)								28(2)							2(4)
8	Introduction to					8(1)	24(2)											
	Trigonometry					9(1)	25(2)											
						10(1)												5(7)
9	Some applications of											37(3)						
	Trigonometry																	1(3)
10	Circles					11(1)		38(3)										2(4)
11	Constructions															34(3)		
																35(3)		2(6)
12	Areas related to Circles	12(1)										39(3)						
		19(1)																3(5)
13	Surface Areas and	13(1)				14(1)						40(3)						
	Volumes																	3(5)
14	Statistics	15(1)					23(2)		41(4)									3(7)
15	Probability									16(1)								
										20(1)								2(2)
		10(10	1(2)			7(7)	5(10)	7(21)	1(4)	3(3)	2(4)	3(9)				2(6)	1(4)	
	Total	11(12)				20(42)				8(16)				3(10)				42(80)

NOTE: Figures outside the bracket indicate the question number and figures within the bracket indicate marks.

This is a model Blue print. Paper setter may make changes in the objectives chapter wise.

PATTERN OF SSC FINAL EXAM QUESTION PAPER (2023 – 2024)

Subject : MATHEMATICS (E) - LEVEL 2 (Basic Mathematics)

Time: 2½ Hrs **Class : X** **Max. Marks: 80**

General Instructions:

Read the following instructions very carefully and strictly follow them.

(i) This question paper consists of **42** questions. All questions are **compulsory**.

(ii) This question paper is divided into four Sections – **A**, **B**, **C** and **D**

(iii) In **Section A**, Questions Nos. **1 to 16** are multiple choice questions (**MCQs**) and questions Nos. **17 to 20** are very short answer type questions (**VSA**) of **1 mark** each.

(iv) In **Section B**, Questions Nos. **21 to 28** are short answer type I (**SA- I**) questions carrying **2 marks** each.

(v) In **Section C**, Questions Nos. **29 to 40** are short answer type II (**SA- II**) questions carrying **3 marks** each

(vi) In **Section D**, Questions Nos. **41 and 42** are long answer (**LA**) questions carrying **4 marks** each.

(vii) There is no overall choice. However, an internal choice has been provided in **two Questions** of **2 marks** each in **Section B** and **two questions** of **3 marks** each in **Section C**.

(viii) In questions on constructions, the drawing should be clear and exactly as per the given measurements. The construction lines and arcs should also be maintained.

(ix) Graph page is provided on the answer booklet.

(x) Use of calculators and mathematical tables is not permitted.

Q. No.	Topic	Thrust areas	Type of Question	Weightage
Section A				
1	Real Numbers	Any concept from Real Numbers	VSA (MCQ)	1 mk
2	Polynomials	Any concept from Polynomials	VSA (MCQ)	1 mk
3	Pair of Linear Equations in Two Variables	Any concept from Pair of Linear Equations in Two Variables	VSA (MCQ)	1 mk
4	Pair of Linear Equations in Two variables	Any concept from Pair of Linear Equations in Two Variables	VSA (MCQ)	1 mk
5	Quadratic Equations	Any concept from Quadratic Equations	VSA (MCQ)	1 mk
6	Arithmetic Progressions	Any concept from Arithmetic Progression	VSA (MCQ)	1 mk

7	Triangles	Any concept from Triangles	VSA (MCQ)	1 mk
8	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA (MCQ)	1 mk
9	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA (MCQ)	1 mk
10	Introduction to Trigonometry	Any concept from Introduction to Trigonometry	VSA (MCQ)	1 mk
11	Circles	Any concept from Circles	VSA (MCQ)	1 mk
12	Areas Related to Circles	Any concept from Area Related to Circles	VSA (MCQ)	1 mk
13	Surface areas and Volumes	Any question on Surface Areas	VSA (MCQ)	1 mk
14	Surface Areas and Volumes	Any question on Surface Areas	VSA (MCQ)	1 mk
15	Statistics	Any concept from Statistics	VSA (MCQ)	1 mk
16	Probability	Any concept from Probability	VSA (MCQ)	1 mk
17	Polynomials	• Find the sum or product of zeroes**/** • Write a quadratic polynomial, given sum and product of zeroes**/** • Find the zeroes of a quadratic polynomial**/** • Find dividend, given quotient, remainder and divisor.	VSA	1 mk
18	Pair of Linear Equations in Two Variables	• Problems based on the existence of solutions of a pair of linear equations in two variables (Table 3.4)**/** • Find the value of k for which the given pair of linear equations has a unique solution or no solution or infinitely many solutions.	VSA	1 mk
19	Areas Related to Circles	• Find length of arc of a circle**/** • area of sector of a circle (figure may be provided) (Do not substitute for π)	VSA	1 mk
20	Probability	Find probability of given events	VSA	1 mk
Section B				
21	**#**Real Numbers	a) Without performing 'long division' method, to find whether the given rational number is terminating or non-terminating and to wite its decimal expansion. **OR** b) Prove a $\pm \sqrt{b}$ is irrational.	SA I	2 mks
22	**#**Real numbers	a) Find HCF of two numbers using Euclid's Division Algorithm. **OR** b) Find LCM of two numbers by the prime factorisation method.	SA I	2 mks

23	Statistics	Find mode of grouped data.	SA I	2 mks
24	Introduction to Trigonometry	Given a trigonometric ratio, to find the value of the other trigonometric ratio using k method.	SA I	2 mks
25	Introduction to Trigonometry	Evaluate given expression by substituting the known values of trigonometric ratios.	SA I	2 mks
26	Triangles	Numerical application based on any one of the four theorems on Triangles.	SA I	2 mks
27	Coordinate Geometry	Problem based on the concept of • Distance formula**/** • Section formula	SA I	2 mks
28	Coordinate Geometry	Problem based on the concept of area of a triangle	SA I	2 mks
		Section C		
29	Polynomials	Divide a cubic polynomial p(x) by a linear polynomial g(x) and write the result in the form $p(x) = q(x) \times g(x) + r(x)$	SA II	3 mks
30	**#**Pair of Linear Equations in Two Variables	a) Find the solution of the pair of linear equations by Elimination method **OR** b) Find the solution of the pair of linear equation by substitution method	SA II	3 mks
31	Quadratic Equations	Find roots of the quadratic equation by Factorisation method.	SA II	3 mks
32	Quadratic Equations	Find roots of the quadratic equation by using quadratic formula.	SA II	3 mks
33	Arithmetic Progressions	Given an AP, to find the n^{th} term and sum of n terms	SA II	3 mks
34	Constructions	Construct tangents to a circle from an external point.	SA II	3 mks
35	Constructions	Construct similar triangles as per given scale factor.	SA II	3 mks
36	**#**Triangles	Proof of any one theorem • B.P.T.**/** • Pythagoras Theorem**/** • converse of Pythagoras theorem (**Any two to be asked**)	SA II	3 mks
37	Some Applications of Trigonometry	Problem with figure showing • an angle of elevation**/** • an angle of depression	SA II	3 mks
38	Circles	• Proof of Theorem 10.2 **/** • Numerical applications	SA II	3 mks
39	Areas Related to Circles	Find area of shaded region.	SA II	3 mks
40	Surface Areas and Volumes	Word problem on concept of volume of combination of two solids.	SA II	3 mks

Section D				
41	Statistics	Find Mean by Direct method. (Given six class intervals)	LA	4 mks
42	Pair of Linear Equations in Two Variables	Find solution of a pair of linear equations in two variables by graphical method.	LA	4 mks
# - Internal choice to be provided				

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