# GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

## ALTO-BETIM    GOA 403521

### MARKS DISTRIBUTION FOR STD IX (2023-2024)

| Sr. No | Mathematics Theory (A) | Marks |
|---|---|---|
| 1 | First Mid Test | 20 |
| 2 | First Terminal Examination | 80 |
| 3 | Second Mid Test | 20 |
| 4 | Second Terminal Examination | 80 |
| | TOTAL (A) | **200** |
| | | |
| **Sr. No** | **Year Round Assessment ( YRA )(B)** | **Marks** |
| 1 | Assignment on Financial Education | 10 |
| 2 | Math Lab activities – First Term | 10 |
| 3 | Math Lab activities – Second Term | 10 |
| 4 | Class response | 05 |
| 5 | Note books | 05 |
| | TOTAL (B) | **40** |
| | TOTAL (A + B) | **240** |

## DESIGN OF THE QUESTION PAPER (2023-2024)

## FIRST MID TEST

## SUBJECT: MATHEMATICS (E)

**Time: 1 hr**                    **Class:  IX**                    **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 | 4 | 20% |
| 2. | Understanding | 7 | 35% |
| 3. | Application | 4 | 20% |
| 4. | Skill | 5 | 25% |
| | **Total** | **20** | **100%** |

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

| Chapter No. | Topic | Marks |
|-------------|-------|-------|
| 1. | Number Systems | **06** |
| 6. | Lines and Angles | **06** |
| 11. | Construction | **03** |
| PDF | Trigonometry | **05** |
| | **Total** | **20** |

**N.B:** The topic 'Introduction to Euclid's Geometry' only for reading purpose.

   Concepts -**Theorem, Axiom & Postulate** to be explained

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 | 4 | 04 |
| 2. | Short Answer Type- I (SA-I) | 2 | 5 | 10 |
| 3. | Short Answer Type- II (SA-II) | 3 | 2 | 06 |
| | **Total** | | **11** | **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 11 questions

# PATTERN OF FIRST MID TEST QUESTION PAPER (2023-2024)

**Time:1 hr.**       **Class IX**       **Subject: MATHEMATICS**       **Max.Marks:20**

| Q. No | Topic | Thrust areas | Type of Question | Weightage |
|---|---|---|---|---|
| 1 | Number Systems | Any Concept on Number Systems | VSA(MCQ) | 1mk |
| 2 | Lines and Angles | Any Concept on Lines and Angles. | VSA(MCQ) | 1mk |
| 3 | Number Systems | • Rational numbers lying between two rational numbers. **/**<br>• Decimal form of rational nos.**/**<br>• Evaluate using the laws of exponents on real nos. | VSA | 1mk |
| 4 | Trigonometry | • Trigonometric ratios of complementary angle (figure provided)**/**<br>• Trigonometric ratios of standard angles (0°, 30°, 45°, 60°, 90°) | VSA | 1mk |
| 5 | # Number Systems | • a) Evaluate using the identities: $(a \pm b)^2$ /$(a + b)(a - b)$ /$(a \pm b)(c \pm d)$ (where a,b,c & d are real nos.)**/**<br><br>• b) Evaluate by Rationalising the denominator : $\dfrac{1}{a \pm \sqrt{b}}$ , $\dfrac{1}{\sqrt{a} \pm \sqrt{b}}$ , $\dfrac{1}{a \pm c\sqrt{b}}$ c)Express the recurring decimals in the form $\dfrac{p}{q}$; q≠0<br>**(Any two to be asked)** | SA-I | 2 mks |
| 6 | Number Systems | • Representing an Irrational number on a number line:<br><br>(Irrational Numbers: √2, √3, √5, √7.5, etc)**/**<br><br>• Representing real numbers on the number line (2 examples) | SA-I | 2mks |
| 7 | Lines and Angles | Proving Theorems:<br><br>• Theorem on Vertically Opposite Angles**/**<br>• Sum of angles in a triangle is 180°. (Figure to be provided) | SA-I | 2mks |
| 8 | Trigonometry | Using Pythagoras Theorem, find the third side of a right angled triangle and hence obtain the value of any one trigonometric ratio of an acute angle. | SA-I | 2mks |

| 9 | Trigonometry | • With the help of a figure, Prove $Sin^2A + Cos^2A = 1$ **/** <br><br> • Evaluate by substituting the known numerical values of Trigonometric ratios. | SA-I | 2 mks |
|---|---|---|---|---|
| 10 | Lines and Angles | Numerical problem using the concepts of <br><br> • Parallel lines & a transversal <br> • Angle sum of a triangle <br> • Exterior angle property of a triangle <br> • Any other concept from this topic. | SA-II | 3mks |
| 11 | #Constructions | Construction of a triangle, given its: <br><br> a) base, base angle and the sum of the other two sides. <br><br>          OR <br><br> b) base, base angle and the difference of the other two sides. | SA-II | 3 mks |
| | | **# internal choice to be provided** | | |

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# DESIGN OF THE QUESTION PAPER (2023-2024)

## SECOND MID TEST

## SUBJECT: MATHEMATICS (E)

**Time : 1 hr**　　　　　　　　**Class :　IX**　　　　　　　　**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 | 4 | 20% |
| 2. | Understanding | 9 | 45% |
| 3. | Application | 7 | 35% |
| 4. | Skill | - | - |
| | **Total** | **20** | **100%** |

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

| Chapter No. | Topic | Marks |
|---|---|---|
| 9 | Areas of Parallelograms and Triangles | **04** |
| 12 | Heron's formula | **07** |
| 15 | Probability | **04** |
| PDF | Logarithms | **05** |
| | **Total** | **20** |

　**N.B** :

In the topic of Areas of Parallelograms and Triangles, the following are for evaluation:

Exercise 9.2: Problems 1, 2, 3 ,6 and examples similar to them

Exercise 9.3: Problems 1, 2, 3,14 and examples similar to them

**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 | 4 | 04 |
| 2. | Short Answer Type I(SA-I) | 2 | 5 | 10 |
| 3. | Short Answer Type II (SA-II) | 3 | 2 | 06 |
| | **Total** | | **11** | **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 11 questions

# PATTERN OF SECOND MID TEST QUESTION PAPER (2023-2024)

**Time:1 hr.      Class IX      Subject: MATHEMATICS      Max. Marks:20**

| Q. No | Topic | Thrust areas | Type of Question | Weightage |
|---|---|---|---|---|
| 1 | Heron's formula | Any Concept from Heron's Formula | VSA(MCQ) | 1mk |
| 2 | Logarithms | One question of the type from Exercise 1 to Exercise 5. | VSA(MCQ) | 1mk |
| 3 | Heron's formula | • To find the semi-perimeter of any triangle / equilateral triangle / Isosceles triangle.**/**<br>• To find the side of an Equilateral triangle/ Isosceles triangle given its perimeter/ semi-perimeter.**/**<br>• To find the third side of a triangle given its semi-perimeter and two of its sides. | VSA | 1mk |
| 4 | Probability | Experimental / Theoretical probability | VSA | 1mk |
| 5 | Areas of Parallelograms and Triangles | Concept of:<br>• Triangles on the same base (or equal bases)& between the same parallels/Parallelograms on the same base (or equal bases) and between the same parallels/Triangle and a parallelogram on the same base(or equal bases) & between the same parallels**/**<br>• To complete the proof (Theorem9.1)**/**<br>• Numerical problems based on concept/theorems 9.2/9.3 | SA-I | 2mks |
| 6 | #Areas of parallelograms and triangles | Problems similar to:<br>• Ex.9.1 (Q.1, Q,2, Q.3, Q.6) and from<br>• Ex.9.3 (Q.1, Q.2, Q.3, Q.14) | SA-I | 2mks |
| 7 | Heron's formula | • To find the Area of a triangle when the length of 3 sides are known or 2 sides and perimeter given**/** | SA-I | 2mks |

| | | <ul><li>To find the Area of a parallelogram given its adjacent sides and one diagonal**/**</li><li>To find the Area of rhombus given its side and one of the diagonals.</li></ul> | | |
|---|---|---|---|---|
| 8 | Logarithms | Given the log /Antilog of a number to the base 10, find the log **/** Antilog of:<br><br>Example:<br><br>If log 1.374 = 0.1380 and<br>Antilog 2.4305 = 269.5 then find:<br><br>i) Log 0.01374<br>ii) Antilog 3.1380<br>iii) Antilog ($\bar{1}$.4305)<br>iv) Log 26.95 | SA-I | 2mks |
| 9 | Logarithms | With the help of logarithmic tables find the following:<br><br>i) Log 54.368<br>ii) Antilog $\bar{2}$. 0741 | SA-I | 2mks |
| 10 | Probability | Experimental probability. | SA-II | 3mks |
| 11 | #Heron's formula | Applications of Heron's formula to find the Area of a general quadrilateral / field, etc. | SA-II | 3 mks |
| | | **# Internal choice to be provided** | | |

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# GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION

## ALTO-BETIM    GOA 403521

## DESIGN OF THE QUESTION PAPER (2023-2024)

## FIRST TERMINAL EXAMINATION

### SUBJECT: MATHEMATICS (E)

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

## 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 | 43 | 53.75 % |
| 3. | Application | 15 | 18.75% |
| 4. | Skill | 12 | 15% |
| | **Total** | **80** | **100%** |

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

| Chapter No. | Topic | Marks |
|-------------|-------|-------|
| 1. | Number Systems | **07** |
| 2. | Polynomials | **17** |
| 3. | Linear Equations in Two Variables | **10** |
| 4. | Lines and Angles | **08** |
| 5 | Triangles | **13** |
| 6. | Quadrilaterals | **10** |
| 7. | Constructions | **07** |
| PDF | Trigonometry | **08** |
| | **Total** | **80** |

**N.B**:

1)In the  topic  of  "**Quadrilaterals"** , the  following are for evaluation:

   Ex8.1: Q nos. 1,2,6,9,10 and examples similar to them

   Ex 8.2 : Q nos.  1, 2, 3 , 4 and examples similar to them

2) In the topic of  "**Coordinate Geometry**", only the **subunits 3.2 Cartesian System and 3.3 Plotting a Point in the Plane if it's Coordinates are Given**, to be taught before teaching ch. 4 "Linear Equations in Two Variables".

3)In the topic  of "**Triangles**"  the **sub unit: 'Inequalities in a Triangle'**, only the numerical applications of the theorems 7.6,7.7 and 7.8, will be tested.

## 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 | 12 | 24 |
| 3. | Short Answer Type II (SA-II) | 3 | 8 | 24 |
| 4. | Long  Answer Type  (LA) | 4 | 3 | 12 |
| | **Total** | | **43** | **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) | 1.5 | 20 | 30 |
| 2. | Short Answer Type I (SA-I) | 4 | 12 | 48 |
| 3. | Short Answer Type II (SA-II) | 6 | 08 | 48 |
| 4. | Long  Answer Type  (LA) | 8 | 03 | 24 |
| | **Total** | | **43** | **150** |

**5**.**Weightage to Difficulty level of questions:**

| S.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 **43** questions

# STD IX   BLUE PRINT OF FIRST TERM EXAM  MATH QUESTION PAPER(2023-2024)

| SRNO | Objectives / Form of Questions / Content/Mks | Knowledge VSA (1) | SA I (2) | SA II (3) | LA (4) | Understanding VSA (1) | SA I (2) | SA II (3) | LA (4) | Application VSA (1) | SA I (2) | SA II (3) | LA (4) | Skill VSA (1) | SA I (2) | SA II (3) | LA (4) | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Number Systems | 1(1) 2(1) | | | | 3(1) | 21(2) | | | | | | | | 22(2) | | | **5(7)** |
| 2 | Polynomials | 4(1) | | | | 5(1) 17(1) 25(2) 27(2) | 23(2) 24(2) | | | | 26(2) | | 41(4) | | | | | **9(17)** |
| 3 | Linear Equations in Two Variables | 6(1) 7(1) | | | | 8(1) 18(1) 19(1) | | | | | 28(2) | | | | | 33(3) | | **7(10)** |
| 4 | Trigonometry | 9(1) 10(1) | | | | 20(1) | 29(2) | 34(3) | | | | | | | | | | **5(8)** |
| 5 | Lines And Angle | 11(1) 12(1) | | | | 13(1) | 30(2) | | | | | 35(3) | | | | | | **5(8)** |
| 6 | Triangles | | | | | 14(1) 15(1) | 31(2) 32(2) | 36(3) | | | | | 42(4) | | | | | **6(13)** |
| 7 | Quadrilaterals | 16(1) | | | | | | 37(3) 38(3) 39(3) | | | | | | | | | | **4(10)** |
| 8 | Constructions | | | | | | | | | | | | | | | 40(3) | 43(4) | **2(7)** |
| | Total | **10(10)** | | | | **24(43)** | | | | **5(15)** | | | | **4(12)** | | | | 43(80) |

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

**This is a model Blue print. Objectives may be changed chapter wise, while setting the question paper.**

**PATTERN OF STD IX FIRST TERM EXAM QUESTION PAPER(2023-2024)**

Time:$2\frac{1}{2}$ hrs.      Class IX      Subject: MATHEMATICS      Max.Marks:80

| Q. No | Topic | Thrust Areas | Type of Question | Weightage |
|---|---|---|---|---|
| 1 | Number Systems | Any concept from Number Systems | VSA(MCQ) | 1mk |
| 2 | Number Systems | Any concept from Number Systems | VSA(MCQ) | 1mk |
| 3 | Number Systems | Any concept from Number Systems | VSA(MCQ) | 1mk |
| 4 | Polynomials | Any concept from Polynomials. | VSA(MCQ) | 1mk |
| 5 | Polynomials | Any concept from Polynomials. | VSA(MCQ) | 1mk |
| 6 | Linear Equations in Two Variables | Any concept from Linear Equations in Two Variables | VSA(MCQ) | 1mk |
| 7 | Linear Equations in Two Variables | Any concept from Linear Equations in Two Variables | VSA(MCQ) | 1mk |
| 8 | Linear Equations in Two Variables | Any concept from Linear Equations in Two Variables | VSA(MCQ) | 1mk |
| 9 | Trigonometry | Any concept  from Trigonometry | VSA(MCQ) | 1mk |
| 10 | Trigonometry | Any concept  from Trigonometry | VSA(MCQ) | 1mk |
| 11 | Lines and Angles | Any concept from Lines and Angles. | VSA(MCQ) | 1mk |
| 12 | Lines and Angles | Any concept from Lines and Angles. | VSA(MCQ) | 1mk |
| 13 | Lines and Angles | Any concept from Lines and Angles. | VSA(MCQ) | 1mk |
| 14 | Triangles | Concept from  inequalities of Triangles-numerical applications | VSA(MCQ) | 1mk |
| 15 | Triangles | Concept from  inequalities of Triangles-numerical applications | VSA(MCQ) | 1mk |
| 16 | Quadrilaterals | Any concept from Quadrilaterals. | VSA(MCQ) | 1mk |

| 17 | Polynomials | •To Find the zero of a linear polynomial/ <br> •To determine if a real number 'K' is a zero of the given polynomial. | VSA | 1mk |
|---|---|---|---|---|
| 18 | Linear Equations in Two Variables | • To express the given linear equation in the form of <br> ax + by + c = 0. and state the values of a , b and c. / <br> • To check whether the given values of 'x' and 'y' are the solution of the given linear equation / <br> • Concepts of Cartesian system from Co-ordinate geometry/ <br> • To write the equation of a line parallel to the X-axis and at a distance of 'K' units above or below it/ <br> • To write the equation of line parallel to the Y-axis and at a distance of 'K ' units to the left or right of it / <br> • If the given values of 'x' and 'y' are the solution of a linear equation in two variables, then find the value of the unknown 'k' | VSA | 1mk |
| 19 | Linear Equations in Two Variables | Write the equations of any two lines passing through the point P(x, y) <br><br> Ex 4.3 eg 2 | VSA | 1mk |
| 20 | Trigonometry | Example based on sin, cos and tan ratios of complementary angles. | VSA | 1mk |
| 21 | #Number Systems | a) Express the recurring decimal in the form $\frac{p}{q}$ ; q≠0 <br><br> **OR** <br><br> b) Rationalise the denominator: <br><br> • $\frac{1}{a\pm\sqrt{b}}$ / <br> • $\frac{1}{\sqrt{a}\pm\sqrt{b}}$ / <br> • $\frac{1}{a\pm c\sqrt{b}}$ | SA-I | 2 mks |

| 22 | Number Systems | Representing Irrational numbers on a number line:<br><br>( Irrational Nos :$\sqrt{2}$ , $\sqrt{3}$, $\sqrt{5}$, $\sqrt{7.5}$ , etc) | SA-I | 2 mks |
|---|---|---|---|---|
| 23 | Polynomials | • To determine if g(x) is a factor of p(x) using the factor theorem**/**<br>•To find the value of k if g(x) is a factor of p(x)**/**<br>•To find the remainder when p(x) is divided by g(x) using the remainder theorem. | SA-I | 2 mks |
| 24 | #Polynomials | To Factorise a given quadratic polynomial $ax^2+bx +c$ by splitting the middle term where a$\neq$ 1<br>(Internal choice to be given) | SA-I | 2 mks |
| 25 | Polynomials | To expand using suitable identities:<br><br>• $(a +b)^3= a^3+3a^2b+3ab^2+b^3$**/**<br>• $(a-b)^3 = a^3 -3a^2b+3ab^2 -b^3$**/**<br>• $(a+b+c)^2=a^2+b^2+c^2+2ab+2bc+2ac$ | SA-I | 2 mks |
| 26 | Polynomials | To evaluate using suitable identities:<br><br>• $(a +b)^3= a^3+3a^2b+3ab^2+b^3$**/**<br>• $(a-b)^3 = a^3 -3a^2b+3ab^2 -b^3$**/**<br>• $(x + a) (x + b) =x^2+ (a +b) x+ ab$ | SA-I | 2 mks |
| 27 | Polynomials | To Factorise using suitable identities:<br><br>• $x^3 + y^3= (x + y) (x^2 -x y +y^2)$**/**<br>• $x^3 - y^3= (x - y) (x^2 +x y +y^2)$**/**<br>• $a^2+b^2+c^2+2ab+2bc+2ac= (a +b +c)^2$**/**<br>• $a^3+3a^2b+3ab^2+b^3= (a +b)^3$**/**<br>• $a^3 -3a^2b+3ab^2 -b^3= (a-b)^3$ | SA-I | 2 mks |
| 28 | Linear Equations in Two Variables | Write Linear equations in two variables for the following two situations. | SA-I | 2 mks |
| 29 | Trigonometry | To prove with the help of a figure, the basic trigonometric identity :<br>$\mathrm{Sin}^2\theta + Cos^2\theta =1$ | SA-I | 2mks |

| 30 | Lines And Angles | • To prove that the vertically opposite angles formed by two intersecting lines are equal. / <br> • To prove the angle sum property of a triangle. <br> (Figure to be provided) | SA-I | 2mks |
|----|-----------------|---------------------------------------|------|------|
| 31 | Triangles | To identify the congruence rule and state the pairs of congruent triangles (2egs) | SA-I | 2mks |
| 32 | Triangles | To prove theorem on isosceles triangle.(Thm7.2/Thm7.3) <br> (Figure to be provided) | SA-I | 2mks |
| 33 | Linear Equations in Two Variables | To draw the graph of a linear equation in two variables. | SA-II | 3mks |
| 34 | #Trigonometry | a) Given the lengths of any two sides of a right-angled triangle to find the length of the third side and hence the values of the given trigonometric ratios. <br> **OR** <br> b) Evaluate trigonometric expression using known trigonometric values of specific angles. | SA-II | 3mks |
| 35 | Lines And Angles | Numerical Applications on <br> •Angle Sum Property of Triangle**/** <br> •Exterior Angle Property of triangle**/** <br> •Pairs of angles**/** <br> •parallel lines and transversal | SA-II | 3mks |
| 36 | Triangles | To prove triangles are congruent by Criteria for Congruence of Triangles (Easy type) | SA-II | 3mks |
| 37 | Quadrilaterals | Theorems on properties of a parallelogram. Thms.(8.1&8.2)/8.7 <br> ( to write /complete the proof) | SA-II | 3mks |
| 38 | Quadrilaterals | Ex8.1: Q nos. 1,2,6,9,10 and examples similar to them | SA-II | 3mks |

| | | Ex 8.2 : Q nos. 1, 2, 3 , 4 and examples similar to them | | |
|----|----|----|----|----|
| 39 | Quadrilaterals | Numerical Application of the midpoint Theorem. | SA-II | 3mks |
| 40 | #Constructions | Construction of a triangle, given its:<br><br>a) base, base angle and sum of the other two sides.<br><br>**OR**<br><br>b) base, base angle and the difference of the other two sides. | SA-II | 3mks |
| 41 | Polynomials | Factorising a given cubic polynomial<br><br>Ex 2.4 - Q 5 type | LA | 4mks |
| 42 | Triangles | To prove triangles are congruent by Criteria for Congruence of Triangles. (Difficult type) | LA | 4mks |
| 43 | Construction | Construction of triangle given its perimeter and two base angles. | LA | 4mks |
| | | **# internal choice to be provided** | | |

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**Time : $2\frac{1}{2}$ hrs**                     **STD : IX**                     **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 | 45 | 56.25% |
| 3 | Application | 16 | 20% |
| 4 | Skill | 07 | 8.75% |
| **Total** | | **80** | **100%** |

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

| Chapter No. | Topic | Marks |
|-------------|-------|-------|
| 10. | Circles | **10** |
| 13. | Surface Areas and Volumes | **12** |
| 14. | Statistics | **13** |
| 9. | Areas of Parallelograms and Triangles | **06** |
| 12. | Heron's Formula | **10** |
| 15. | Probability | **06** |
| PDF | Logarithms | **08** |
| 2 | Polynomials | **04** |
| 4 | Linear Equations in Two Variables | **04** |
| 7 | Triangles | **03** |
| PDF | Trigonometry | **04** |
| | **Total** | **80** |

**N.B: Thrust areas of the following topics for the Second Term Exam**

**Ch2) Polynomials**- Factorisation of a quadratic polynomial by splitting the middle term,

Factor theorem and Remainder theorem.

**Ch 4) Linear Equation in two variables-** Drawing the graph of a linear equation in two

variables and important concepts

**Ch 7) Triangles**- To prove two triangles are congruent by using the Criteria for Congruence

of triangles

**Trigonometry**- PDF

**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 | 11 | 22 |
| 3. | Short Answer Type II (SA-II) | 3 | 10 | 30 |
| 4. | Long Answer Type (LA) | 4 | 2 | 08 |
| | **Total** | | **43** | **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 | 11 | 33 |
| 3. | Short answer Type II ( SA-II ) | 6 | 10 | 60 |
| 4. | Long answer Type ( LA ) | 8.5 | 02 | 17 |
| | **Total** | | **43** | **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 **43** questions

# BLUE PRINT OF SECOND TERM EXAM - MATH QUESTION PAPER (2023-2024)

## STD IX

| Sr No | Objectives Forms of Questions Content/marks | Knowledge VSA 1 | SA-I 2 | SA-II 3 | LA 4 | Understanding VSA 1 | SA-I 2 | SA-II 3 | LA 4 | Application VSA 1 | SA-I 2 | SA-II 3 | LA 4 | Skill VSA 1 | SA-I 2 | SA-II 3 | LA 4 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Circles | 1(1) | 21(2) | | | 2(1) | | 32(3) | | | | 33(3) | | | | | | 5(10) |
| 2 | Surface areas and Volumes | 3(1) | 22(2) | | | 4(1) 5(1) | 23(2) | | | | 24(2) | 34(3) | | | | | | 7(12) |
| 3 | Statistics | 17(1) | | | | | 25(2) | 35(3) 36(3) | | | | | | | | | 42(4) | 5(13) |
| 4 | Areas of parallelograms and triangles | | | | | 6(1) | 26(2) | 37(3) | | | | | | | | | | 3(6) |
| 5 | Heron's formula | 7(1) | | | | | 27(2) | 38(3) | | | | | 43(4) | | | | | 4(10) |
| 6 | Probability | | | | | 8(1) 9(1) | | | | 18(1) | | 39(3) | | | | | | 4(6) |
| 7 | Logarithms | | 29(2) | | | 10(1) 11(1) 19(1) 20(1) | 28(2) | | | | | | | | | | | 6(8) |
| 8 | Polynomials | | | | | 12(1) 13(1) | 30(2) | | | | | | | | | | | 3(4) |
| 9 | Linear equations in two variables | | | | | 14(1) | | | | | | | | | | 40(3) | | 2(4) |
| 10 | Triangles | | | | | | | 41(3) | | | | | | | | | | 1(3) |
| 11 | Trigonometry | 15(1) 16(1) | | | | | 31(2) | | | | | | | | | | | 3(4) |
| | | 6(6) | 3(6) | | | 13(13) | 7(14) | 6(18) | | 1(1) | 1(2) | 3(9) | 1(4) | | | 1(3) | 1(4) | |
| | **Total** | | **9(12)** | | | | **26(45)** | | | | **6(16)** | | | | **2(7)** | | | **43(80)** |

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

**This is a model blue print.**
**Objectives may be changed chapter wise , while setting the Question paper.**

# PATTERN OF SECOND TERM EXAM QUESTION PAPER ( 2023-2024 )
## STD IX

Time: $2\frac{1}{2}$ Hrs          Subject : MATHEMATICS (E)          Max. Marks: 80

| Q No | Topic | Thrust areas | Type of Question | Weightage |
|------|-------|--------------|------------------|-----------|
| 1 | Circles | Any concept from Circles | VSA (MCQ) | 1 mk |
| 2 | Circles | Any concept from Circles | VSA (MCQ) | 1 mk |
| 3 | Surface Areas and Volumes | Any question from Surface Areas and Volumes | VSA (MCQ) | 1 mk |
| 4 | Surface Areas and Volumes | Any question from Surface Areas and Volumes | VSA (MCQ) | 1 mk |
| 5 | Surface Areas and Volumes | Any question from Surface Areas and Volumes | VSA (MCQ) | 1 mk |
| 6 | Areas of Parallelograms and Triangles | Any concept from Areas of Parallelograms and Triangles | VSA (MCQ) | 1mk |
| 7 | Heron's Formula | Any concept from Heron's Formula | VSA (MCQ) | 1 mk |
| 8 | Probability | Experimental / Theoretical probability | VSA (MCQ) | 1 mk |
| 9 | Probability | Experimental / Theoretical probability | VSA (MCQ) | 1 mk |
| 10 | Logarithms | Any concept from Logarithms ( Ex. 1 to Ex. 5 ) | VSA (MCQ) | 1 mk |
| 11 | Logarithms | Any concept from Logarithms ( Ex. 1 to Ex. 5 ) | VSA (MCQ) | 1 mk |
| 12 | Polynomials | Remainder Theorem | VSA (MCQ) | 1 mk |
| 13 | Polynomials | Factor Theorem | VSA (MCQ) | 1 mk |
| 14 | Linear Equations in two variables | Any concept from Linear equations in two variables | VSA (MCQ) | 1 mk |
| 15 | Trigonometry | Trigonometric ratios of complementary angles | VSA (MCQ) | 1 mk |
| 16 | Trigonometry | Trigonometric ratios of specific angles ( 0° , 30° , 45° , 60° , 90 °) | VSA (MCQ) | 1 mk |
| 17 | Statistics | • Find lower limit / upper limit / class mark / class size of the specified class interval./ • Find the mean of the given ungrouped data/ • Find the median / mode of the given ungrouped data/ | VSA | 1 mk |

| 18 | Probability | Experimental / Theoretical probability | VSA | 1 mk |
|---|---|---|---|---|
| 19 | Logarithms | • Express the given number in exponential form into logarithmic form / <br> • Express the given number in logarithmic form into exponential form. | VSA | 1 mk |
| 20 | Logarithms | Find the value of the logarithm of a number to any base by using the definition of logarithm. | VSA | 1 mk |
| 21 | Circles | • To write the proof of theorem 10.1 / <br> • the proof of theorem 10.2 | SA-I | 2mks |
| 22 | Surface Areas and Volumes | Simple problems to find- Lateral Surface Area/Curved Surface Area/Total Surface Area/ Volume of - Cube/Cuboid/Cylinder/Cone/Sphere/ Hemisphere | SA-I | 2 mks |
| 23 | Surface Areas and Volumes | Problems in which Lateral Surface Area/Curved Surface Area/Total Surface Area /Volume of a - Cube/Cuboid/Cylinder/Cone/Sphere/Hemisphere are given and to find the unknown quantities. | SA-I | 2 mks |
| 24 | Surface Areas and Volumes | Application problems on Surface area of- Cube/Cuboid/Cylinder/Cone/Sphere/Hemisphere | SA-I | 2 mks |
| 25 | Statistics | • Given Mean /Median, find the unknown observation/ <br> • Histogram: To complete the table of class intervals with varying width - to find the length of rectangles <br>    Eg Table 14.8 ( with 4 class intervals) | SA-I | 2 mks |
| 26 | Areas of Parallelograms and Triangles | • To complete the proof ( Theorem 9.1 ) / <br> • Problem similar to Ex. 9.2 (Q1 , Q2 , Q3 , Q6) | SA-I | 2 mks |
| 27 | Heron's Formula | • To find the area of a triangle when two sides and perimeter is given/ <br> • To find the area of the triangle when ratio of the 3 sides and perimeter is given/ <br> • To find area of isosceles triangle/equilateral triangle given perimeter/length of sides. | SA-I | 2 mks |
| 28 | Logarithms | Given the log /antilog of a number to the base 10, find the log / antilog of: <br> **Example:** <br> If log 1.374 = 0.1380 and <br> Antilog 2.4305 = 269.5 then find: <br> i) log 0.01374     iii) antilog $\bar{1}$.4305 <br> ii) antilog 3.1380    iv) log 26.95 | SA-I | 2 mks |
| 29 | Logarithms | Using logarithmic tables find the log and antilog of the following . <br> **Example** : <br> Find  i) log 637.68    ii) antilog $\bar{2}$. 0657 | SA-I | 2 mks |
| 30 | #Polynomials | To factorise a given quadratic polynomial $ax^2+bx+c$ by splitting the middle term where $a \neq 1$ <br> **( Internal choice to be given )** | SA-I | 2 mks |

| 31 | #Trigonometry | a)Given the lengths of any two sides of a right-angled triangle to find the length of the third side and hence the value of the given trigonometric ratio.<br>**OR**<br>b)Evaluate trigonometric expression using known trigonometric values of specific angles. | SA-I | 2 mks |
|---|---|---|---|---|
| 32 | Circles | Numerical problems based on Thms.: 10.3 , 10.4 , 10.6 , 10.7 | SA-II | 3 mks |
| 33 | #Circles | Numerical problems based on Thms.:10.8 , 10.9 , 10.10 , 10.11 , 10.12.<br>**( Internal choice to be given )** | SA-II | 3 mks |
| 34 | Surface Areas and Volumes | Application problems on Volume of - Cube **/** Cuboid**/**Cylinder**/**Cone**/**Sphere**/**Hemisphere | SA -II | 3 mks |
| 35 | Statistics | To construct a grouped frequency distribution table with<br>• Continuous class intervals **/**<br>• Non Continuous(discrete) Class intervals | SA-II | 3 mks |
| 36 | Statistics | To find the mean from an ungrouped frequency distribution table. | SA-II | 3 mks |
| 37 | Areas of Parallelograms and Triangles | Numerical problems based on concepts of Th. 9.2 **/** Th. 9.3 **/** Examples 2 , 3, 4 **/** Ex.9.3 ( Q.1, Q.2 , Q.3 , Q.14 ) | SA-II | 3 mks |
| 38 | Heron's Formula | To find the area of any triangular region**/**quadrilateral | SA-II | 3 mks |
| 39 | Probability | To find the experimental probability of events. | SA-II | 3 mks |
| 40 | Linear equation in two variables | To draw the graph of a linear equation in two variables. | SA-II | 3 mks |
| 41 | #Triangles | To prove two triangles are congruent by criteria for congruence of triangles.<br>**( Internal choice to be given )** | SA-II | 3 mks |
| 42 | Statistics | • Draw a histogram and hence a frequency polygon for the given frequency distribution.**/**<br>• To draw a frequency polygon | LA | 4 mks |
| 43 | Heron's Formula | Applications of Heron's formula to find area of a general quadrilateral / field and cost factor etc. | LA | 4 mks |
| **# Internal choice to be provided** | | | | |