SSLC EXAMINATION 2020 PASSING PACKAGE



PREPARED BY THE FACULTY OF TRILLIUM PUBLIC SCHOOL, RT NAGAR BANGALORE-32



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MATHEMATICS

PASSING PACKAGE

I. Theorems on Triangles -

- 1. State & Prove Basic Proportionality Theorem. [Thale's Theorem]
- 2. State & Prove AA Similarity criterion Theorem.
- 3. Theorem on Areas of similar Triangles.
- 4. State & Prove Pythagoras Theorem.
- 5. State & Prove converse of Pythagoras Theorem.

II. Theorems on Circles -

[3 Marks]

[3 Marks]

- 1. Prove that "The tangent at any point of a circle is perpendicular to the radius through the point of contact."
- 2. Prove that "The lengths of tangents drawn from an external point to a circle are equal."

Solving Graphica	ally:		[4 Ma	rks]
1. $x-2y = 0$	2. x+y=5	3. x+3y=6	4. 2x+y-6=0	
3x+4y=20	x-y=8	2x-3y=12	4x-2y-4=0	
5. 5x+y=17	6. x+y=10	7. 2x-y=2	8. y=2x+1	
2x-2y=2	x-y=2	4x-y=4	x=2y-5	
	Solving Graphica 1. x-2y =0 3x+4y=20 5. 5x+y=17 2x-2y=2	Solving Graphically:1. $x-2y=0$ 2. $x+y=5$ $3x+4y=20$ $x-y=8$ 5. $5x+y=17$ 6. $x+y=10$ $2x-2y=2$ $x-y=2$	Solving Graphically:1. $x-2y = 0$ 2. $x+y=5$ 3. $x+3y=6$ $3x+4y=20$ $x-y=8$ $2x-3y=12$ 5. $5x+y=17$ 6. $x+y=10$ 7. $2x-y=2$ $2x-2y=2$ $x-y=2$ $4x-y=4$	Solving Graphically:[4 Mathefamilie]1. $x-2y=0$ 2. $x+y=5$ 3. $x+3y=6$ 4. $2x+y-6=0$ $3x+4y=20$ $x-y=8$ $2x-3y=12$ $4x-2y-4=0$ 5. $5x+y=17$ 6. $x+y=10$ 7. $2x-y=2$ 8. $y=2x+1$ $2x-2y=2$ $x-y=2$ $4x-y=4$ $x=2y-5$

IV. Ogive curve

1. Construct less than type & more than type Ogive.

i.											
	C.I	0-3		3-6		6-9		9-1	2	12	2-15
	f	9		3		5		3			1
ii.										1	
	C.I	40-45	45-	-50	50-5	5	55-60		60-65		65-70
	f	4	6		16)	20		30		24
iii.											
	C.I	100-150		150-20	0	200-2	250	250)-300	3	00-350
	f	15		12		10	10		8		5
iv.										1	
	C.I	100-120		120-14	0	140-	160	16	0-180	1	80-200
	f	12		14		8			6		10
v.							-				
	C.I	50-55	55	-60	60-6	55	65-70		70-75		75-80
	f	2		8	12	2	24		38		16

[4 Marks]

1)										
	C.I	1-5	5-9)	9-13		13-17		17	-21
	f	7	2	,	2		8			1
2)										
	C.I	0-10	1	0-20	20-30		30-40		40-	-50
	f	3		5	9		5			3
3)										
	C.I	15-25	25-35	35-45	45-55	55	5-65	65-7	5	75-85
	f	6	11	7	4		4	2	2	1
4)										
	C.I	10-	-20	20-30		30-4	-0	2	40-50)
	f	4		7		8			3	

VI. Coordinate Geometry

[2+3=5 Marks]

[2 Marks]

- 1. Find the distance between the points:
 - i. (2, -2) & (14, 10)
 - ii. (8, -3) & (0,9)
 - iii. (-5, -7) & (-1, 3)
 - iv. (1,7) & (4,2)
 - v. (2, 3) & (6, 6)
- 2. Find the distance of the point (3, 4) & the origin.
- 3. The distance between the point (4, 3) & the origin is _____
- 4. Find the coordinates of the midpoint of the line segment joining the points.

i. (2, 3) & (4, 7) ii. (6, 2) & (4, 4)

iii. (8, 5) & (6, 3) iv. (4, 5) & (6, 3)

- 5. Find the coordinates of the points which divides the join of (2, 1) & (7, 6) in the ratio 3 : 2
- 6. Find the ratio in which P(-4, 6) divides the line joining points A(-6, 10) & B(3,-8)
- 7. Find the coordinates of the points which divides the line segment joining the points (-5, 11) & (4, -7) in the ratio 7 : 2
- 8. Find the ratio in which the point (2, 5) divides the line segment (8, 2) & (-6, 9).

[3 Marks]

9. Find the value of K, if the points A(2, 3) B(4, K) & C(6, 3) are collinear.

10. Find the perimeter of a triangle whose vertices have the coordinates

- i. (3, 10) (5, 2) & (4, 12)
- ii. (-2, 1) (4, 6) & (6, 3)

11. Find the area of a triangle whose vertices are

- i. (1, 1), (-4, 6) & (-3, -5)
- ii. A (2, 3), B(4, 4) & C(2, 6)
- iii. (2, -2), (-2, 1) & (5, 2)

VII. Construction

[2+3=5 Marks]

[2 Marks]

- 1. Construct a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of 60°.
- 2. Draw a pair of tangents to a circle of radius 4 cm so that angle between tangents is 60 °.
- 3. Draw two tangents from a point 10 cm away from the centre of circle of radius 6 cm.
- 4. Draw a circle of radius 3 cm construct a pair of tangents to it, from a point 8 cm away from its centre.
- 5. Draw a line segment AB = 6 cm & divide it in the ratio 1:2.
- 6. Draw a tangent to a circle of radius 3 cm at any point on the circle.

[3 Marks]

- 1. Draw a \triangle ABC with side base BC= 8 cm & altitude 4 cm, & then construct another triangle whose sides are 5/3 times the corresponding sides of \triangle ABC.
- Draw a right triangle in which the sides (other than hypotenuse) are of lengths 8 cm & 6 cm, then construct another triangle whose sides are 5/3 times the corresponding sides of the given triangle.
- Construct a △ of sides 4 cm, 5 cm & 6 cm & then construct a similar △ whose sides are 2/3 of the corresponding sides.
- 4. Draw a \triangle ABC with BC= 6 cm, AB= 5 cm, & < ABC= 60°. Then construct a \triangle ^{le} whose sides are 3/5 of the corresponding side of \triangle ABC.

5. Draw a \triangle ABC with sides BC= 7 cm, < B= 45 & < A= 105. Then construct a similar triangle whose sides are 4/3 of the corresponding sides.

VIII. Polynomials

[3 Marks]

- 1. If 3 & -3 are two zeros of the polynomials $P(x) = x^4 + x^3 11x^2 9x + 18x + x 11x 9x + 18$, then find the remaining two zeros.
- 2. Write the number of zeros of the polynomial $P(x) = x^3 + 2x^2 x + 6$.
- 3. Write the general form & degree of
 - (i) Linear polynomial (ii) Quadratic Polynomial (iii) Cubic Polynomial
- 4. Find the zeros of the polynomial

(i) $6x^2-3-7x$ (ii) $3x^2-x-4$ (iii) $4u^2-8u$ (iv) x^2-15

5. Divide

i. $x^{4}-3x^{2}+4x+5$ by $x^{2}+1-x$ ii. $x^{3}-3x^{2}+5x-3$ by $x^{2}-2$ iii. $x^{4}-5x+6$ by $2-x^{2}$ iv. $3x^{4}+5x^{3}-7x^{2}+2x+2$ by $x^{2}+3x+1$ v. $x^{6}-2x^{5}-x+2$ by x-2

6. If the polynomial x^3-3x^2+x+2 is divided by g(x), then the remainder is (-2x+4) & quotient is (x-2). Find g(x)

7. Find all the zeros of $2x^4-3x^3-3x^2+6x-2$ two of its zeros are $\sqrt{2}$ & - $\sqrt{2}$.

8. Find the Quadratic polynomial whose sum & product are:

(i) $\frac{1}{4}$ & -1 (ii) $2+\sqrt{3}$ & $2-\sqrt{3}$.

9. Find the sum and product of zeros of the polynomial x^2-8-2x .

IX. Quadratic Equations:

(2 M)

1. Find the roots of the following:

(i) $3x^2 - 5x + 2 = 0$	$(ii)2x^2-3x+1$	$(iii)x^2-12x+27=0$	(iv) $x^2-2x-4=0$
(v) $x^2-7x+12$	$(vi)x^2+6x-7=0$	(vii)15m ² -11m+2=0	(viii) 6x ² +7x-10=0

2. Find the nature of the roots:

(i) $2x^2 - 3x + 5 = 0$ (ii) $3x^2 - 4\sqrt{3}x + 4 = 0$ (iii) $2x^2 - 6x + 3 = 0$ (iv) $x^2 - 2x - 3 = 0$ (v) $4x^2 - 5x + 3 = 0$

3. Find the value of K for which the equation $2x^2+kx+3=0$ has equal roots.

X. Linear Equations

1. Solve for x & y or solve the following equations.

(i) 2x-y-6=0 (ii) 2x+y=3 (iii) 3x+4y=10 (iv) 10x+3y=752x-y-2=0 x+3y=-1 2x-2y=2 6x-5y=11(v) 2x+y=53x+2y=8

XI. Real Numbers:

Prove the following are Irrationals.

(i) 3+√5	(ii) 3 - √2	(iii) 5 - √3	$(iv)2+\sqrt{5}$	(v)3+2√5	(vi) √2
(vii) √5	(viii) √3	(ix) 1/√2	(x) 7 √5		

XII. Probability

- Two cubical dice whose faces are numbered 1 to 6 are rolled simultaneously once. Find the probability that the sum of the two numbers occurring on their top faces is more than 7.
- 2. The probability of an event 'E' is 0.05 then the probability of an event 'Not E' is
- 3. A die is thrown once what is the probability of getting (i) a cube number (ii) even numbers.
- 4. A die is numbered as √1, √2, √3, √4, √5 & √6. Find the probability of getting
 (i) Irrational number (ii) an even number.

XIII. Trigonometry

- 1. Trigonometric Ratios & Values.
- 2. Standard angles of Trigonometry.
- 3. Complementary angles.
- 4. Trigonometric Identities.

(1 or 2 M)

(2 M)

(2 M)

 $(2 \mathrm{M})$

1 Mark Questions

- 1. State Basic Proportionality Theorem?
- 2. State Converse of Basic Proportionality Theorem.
- 3. State Pythagoras Theorem.
- 4. State Converse of Pythagoras Theorem.
- 5. Statement of Area Theorem.
- 6. Statement of AA criterion or Equiangular Theorem.
- 7. When do you say two triangles are similar?
- 8. State Baudhayan Theorem.
- 9. Conditions of lines [constituency of lines].
- 10. Tangents and secants.
- 11.Euclid's division algorithm.
- 12.State Fundamental Theorem of Arithmetic.
- 13.Express each number as a product of its Prime factors.
- 14. Terminating or non terminating decimal expansion.
- 15.Degree of a polynomial & Zeros of a Polynomial.
- 16.Value of a Polynomial.
- 17.Standard form of a (i) Linear Polynomial (ii)Quadratic Polynomial(iii) Cubic Polynomial.
- 18.Standard form of a Linear Polynomial, Quadratic Polynomial & Cubic Polynomial.
- 19.Formula to find the roots of a Quadratic equation.
- 20. What is discriminant?
- 21.Nature of roots of Q.E.
- 22.Formula of Probability.
- 23.Complementary events.

III Theme:

Trigonometry.

[9 Marks]

- 1. If Sin A = $1/\sqrt{2}$ the magnitude of | A is _____.
- 2. If $\sin \theta = 3/5 \& \cos \theta = 4/5 \text{ find } Sin^2 \theta + Cos^2 \theta$.

3. Find the value of $\sin 30^\circ + \cos 60^\circ$.



- 5. Evaluate : (i) $\underline{\text{Sin 18}^{\circ}}$ (ii) $\cos 48^{\circ} \sin 42^{\circ}$ (iii) $\underline{\tan 26^{\circ}}$ (iv) $\operatorname{Cosec 31^{\circ}-Sec59^{\circ}}$ Cos 72° Cot 64°
- 6. Find the Value of Sin 90° + tan 45°
- 7. Show that $\tan 48^{\circ} \tan 23^{\circ} \tan 42^{\circ} \tan 67^{\circ} = 1$
- 8. Show that $\cos 38^{\circ} \cos 52^{\circ} \sin 38^{\circ} \sin 52^{\circ} = 0$
- 9. Trigonometric Identities.