SSC- EXAMINATION 2026

MATHEMATICS MOST IMPORTANT QUESTION

LONG PROBLEM SOLVING [6MARKS]

1Q Prove that $\sqrt{3}+\sqrt{5}$ is an irrational number

2Q Prove that $\sqrt{2}+\sqrt{7}$ is an irrational number

3Q. Prove that $2\sqrt{3}-\sqrt{5}$ is an irrational number.

4Q. Show that a cube of any positive integer will be in the form of $8m$ or $8m+1$ or $8m+3$ or $8m+5$ or $8m+7$ where m is a whole number

5Q Show that the square of a positive integers is of the form $3p$ or $3p+1$ but not $3p+2$

6Q. If $x^2+y^2=10xy$ then prove that $2\log(x-y)=3\log(2)+\log(x)+\log(y)$

7Q. Find the points of trisection of the line segment joining the points $(-2,1)$ and $(7,4)$

8Q. Find the ratio in which x-axis divides the line segment joining the points $(2,3)$ and $(5,6)$ Then find the intersecting point on x-axis

9Q. Find the area of the quadrilateral ABCD whose

Vertices are A(2,3) B(6,7) C(10,4) and D(4,1)

10q. Find the points which divide the line segment joining the points (-3,-5) and (-6,-8) in the ratio (2:3)

11q. Draw the graph of the following polynomials

(i) $P(x) = x^2 + 2x - 3$

(ii) $P(x) = x^2 - 2x - 3$

(iii) $P(x) = x^2 - 3x - 4$

(iv) $P(x) = x^2 - x - 6$

(v) $P(x) = x^2 + 3x + 2$.

12q. Sum of the areas of two squares is 850 m^2 If the difference of their perimeters is 40m. find the sides of the squares

13q Construct a triangle of side 5cm 8cm and 4cm then Construct a triangle similar to it whose sides are 3/4 of the corresponding sides of the first triangle

14q. Construct a triangle of side 4cm 5cm and 6cm then Construct a triangle similar to it whose sides are 5/3 of the corresponding sides of the first triangle

15q. Construct an isosceles triangle whose base is 8cm and altitude is 4cm then draw another triangle whose sides are 1 1/2 times the corresponding sides of the

16Q. Construct ΔABC in which $AB = 6cm$ $\angle A = 60^\circ$, and $AC = 5cm$ Construct a triangle similar to it whose sides are $3/4$ of the corresponding sides of ΔABC

17Q. Construct ΔABC if $AB = 5cm$, $BC = 6cm$ and $\angle B = 60^\circ$ then construct a similar triangle whose sides are $3/2$ of the corresponding sides of ΔABC

18Q. Draw an equilateral triangle of side 3.9cm Construct a similar triangle to it with each $4/3$ of the corresponding sides of the first triangle.

19Q. The present ages of two friends are 28 years. Five years ago the product of their ages was 42 years. find the ages 5 years hence.

20Q. find the arithmetic mean of the following data

Family Size	1 - 3	3 - 5	5 - 7	7 - 9	9 - 11
Number of Families	7	8	2	2	1

21Q Find the median of the following data

Class Interval	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
Frequency	10	25	28	12	10	15

22q Find the mode for the following

Class Interval	1000 – 1500	1500 – 2000	2000 – 2500	2500 – 3000	3000 – 3500	3500 – 4000	4000 – 4500	4500 – 5000
Frequency	24	40	33	28	30	22	16	7

SHORT PROBLEM SOLVING [4 MARKS]

1q. Write the formula for mode of a grouped data and Explain each term

2q. Write the formula to find the median of a grouped data and Explain alphabet in it

3q. Write the formula to find the sum of n terms of Arithemetic progression and Explain each term

4q. Write the formula to find total Surface area of the Cylinder and Explain each term

5q. Write the formula to find the volume of a Cone and Explain each terms

6q. The length of the tagent to a circle from point 17 cm from its centre is 8cm find the radius of the circle

7q What is the probability of a number picked from first

twenty natural numbers is even composite number?

8Q. What is the probability of getting exactly two heads, when three coins tossed simultaneously?

9Q. In a bag there are 5 Red balls, 2 Black balls and 3 white balls. If one ball is selected randomly from the bag then find the probability of-

10Q. (i) Getting a Red ball

(ii) Getting not a Red ball

10Q. Prove that $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\operatorname{cosec}\theta$

11Q. Find measures of the angles A and B If $\cos(A-B) = \sqrt{3}/2$ and $\sin(A+B) = \sqrt{3}/2$.

13Q If $\cos 4A = \sin(A-15)$ then find the value of A.

14Q. Find the value of $\tan 60^\circ + \cot 30^\circ \,/\, \sin 30^\circ + \cos 60^\circ$

15Q Show that $4\cos^2 30^\circ + 3\cot^2 60^\circ + \sec^2 60^\circ = 6$

16Q. Evaluate $\operatorname{cosec} 39^\circ \cdot \sec 51^\circ - \tan 51^\circ \cdot \cot 39^\circ$

17Q If $\sec\theta + \tan\theta = p$ then prove that $\sin\theta = p^2-1/p^2+1$

18Q If $A = \{x : x \in N \text{ and } x < 4\}$ $B = \{x : x \text{ is a prime factor of } 105\}$ find $A \cup B$, $A \cap B$

19φ If $A = \{x : x \in N, x < 10\}$, $B = \{x : x$ is a prime number and $x < 10\}$ then Show that $A - B \neq B - A$ with the help of a venn diagram

20φ. If $A = \{x : x$ is a prime number less than $20\}$, $B = \{x : x$ is a whole number less than $20\}$ then verify $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

21φ. The height and the base radius of a cone and a cylinder are equal to the radius of a sphere find the ratio of their volumes

22φ. A right circular cylinder has radius 3.5cm and height 14cm find the curved surface areas.

23φ. In the hemispherical bowl of 2.1cm radius ice-cream. There find the volume of the bowl

24φ Two cubes have volume in the ratio 1:8 find the ratio of their surface area

25φ A cone has radius 7cm and slant height 25cm find its CSA and TSA

26φ. A Solid Sphere of radius 7cm is melted into 8 Smaller pieces Spheres find the radius of each Small Sphere

27Q How many bricks of size of 20cm x. 10cm x 5cm can be made from $1\ m^3$ of clay?

28Q. A cylindrical wire of radius 2mm is drawn into a wire of radius 1mm, find its new length.

29Q The curved surface area of a cylinder $440\ cm^2$. If height is 10 cm., find the radius.

30Q A cone has. CSA $= 154\ cm^2$ and Slant height $= 14cm$ find the height of cone.

31Q In ΔABC $PQ \parallel BC$ and $AP = 3x-19$ $PB = x-5$ $AQ = x-3$ $QC = 3cm$ find x

32Q $\Delta ABC \sim \Delta DEF$ and their areas are the points on sides AB and AC respectively If $AD = 4cm$ $DB = 6cm$ $AE = 6cm$ and $EC = 9cm$ then show that $DE \parallel BC$

33Q $\Delta ABC \sim \Delta DEF$ $BC = 3cm$ $EF = 4cm$ Area of $\Delta ABC = 54\ cm^2$ Determine the area of ΔDEF

34Q The areas of two similar triangles are $81\ cm^2$ and $49\ cm^2$ respectively If the altitude of the bigger triangle is 4.5cm find the corresponding altitude of the smaller triangle.

VERY SHORT PROBLEM SOLVING [2 MARKS]

1Q. Express 360 as a product of prime factors

2Q Expand $\log a^3 b^2 c^5$

3Q. If $P(x) = x^2 + 3x + 4$ then find the values of $P(0)$ and $P(1)$

4Q. Find the HCF of 210 and 55 using Euclid division lemma

5Q. Find the HCF and LCM of 56 and 84 using the prime factorisation method.

6Q If $A = \{x : x$ is a letter of the word TELANGANA$\}$ write a set in roster form Also find the cardinal number of the set.

7Q Find the H.C.F. of 414 and 1098 by prime factorisation method.

8Q. Is the pair of linear equation $3x - 5y = 7$ and $6 - 10y = 13$ inconsistent ? Justify your answer

9Q For what value of p the following pair of linear has a unique solution ? $2x + Py - 5 = 0$, $3x + 3y - 6 = 0$

10Q. For what value of K the pair of equations $3x + 4y + 2 = 0$ and $9x + 12y + K = 0$ represent Coincident lines ?

11Q In a rectangle ABCD AB = 2x-y, BC=15 CD = 2 and DA = x+3y then find the value of x and y

12Q Is $(x+2)^2 = x^2+3$ a Quadratic Equation ? Justify

13Q Write a Quadratic equation whose roots are the values of sin 30° and cos 60°

14Q Write a Quadratic Equation having the roots $\log_2 8$ and $\log_{10} 100$

15Q A flag pole stands vertically on the ground from a point which is 15 metres away from the foot of the tower the angle of Elevation of the top of the tower is 45. Draw a Suitable diagram for the given data

16Q An observer standing at a distance of 50 mtrs from the foot of a tower observers its top with an angle of Elevation of 60° Draw a Suitable diagram for this situation

17Q Express $\sin\theta$ in terms of $\tan\theta$.

18Q Express $\sec\theta$ in terms of $\cot\theta$

19Q Express $\cos\theta$ in terms of $\operatorname{cosec}\theta$.

20Q Express $\tan\theta$ in terms of $\sin\theta$.

21Q Find the distance between the points (0,0) and (Sin 90° Cos 0) where 0° < 0 < 90°

22Q Show that the points A = (-6,10) B (-4,6) and C (3,-8) are collinear

23Q Find the centroid of the triangle whose vertices are (2,3) (-4,7) and (2,9)

24Q find the midpoint of the line segments joining by the points (-2,1) and (7,4)

25Q If the slope of the line joining by the points (2,5) and (x,3) is 2 find x.

26Q Find the 20th term of the AP 7, 11, 15, 19.....

27Q If 5th term of an AP is 22 and Common difference is 3 find the first term

28Q If $a = 45$ and $a_{10} = 80$ find the Common difference and find first term

29Q The 3rd term of AP is 12 and the 7th term is 24. find

30Q find the sum of first 25 terms of AP 5, 9, 13, ...

31Q The first term is 10 and last term is 150 If there are 25 terms, find the sum.

32q Which term of the AP 3, 8, 13, 18, ... is 98?

33q If 4th term is 15 and 10^{th} term is 39 find which term is 111

34q In an AP, the sum of first 7 terms is 63 and sum of first 14 terms is 224. find the AP

35q Find the 10^{th} term of the arithemetic progression 3, 5, 7