SSC MATHEMATICS 2026

Important Model Questions

VSAQs

① Find the distance of the point $(\log_{10}^{1000}, \log_{2}^{16})$ from the origin.

② Expand: $\log\left(\frac{405}{32}\right)$

③ Expand $\log\left(\frac{243}{32}\right)$

④ If $A = \{1,2,3,4\}$, $B = \{2,4,6,8\}$ find $A-B$ & $B-A$

⑤ The angle of elevation of the top of a tower from a point on the ground at a distance of 7cm from the foot of the tower is 60°. Draw suitable diagram

⑥ The length of minute hand of a clock is 3.5cm Find the area swept by the minute hand in 30 minutes $\left(\pi = \frac{22}{7}\right)$

⑦ Is $(x+1)^2 = 2(x-3)$ a quadratic equation? Justify

⑧ If the pair of linear eqns $(3k+1)x + (3y-2) = 0$ and $(k^2+1)x + (k-2)y - 5 = 0$ has no solns, then find the value of k

⑨ Show that the points A(−6, 10), B(−4, 6) and C(3, −8) are collinear.

(10) The ratio of radius and slant height of a Right circular cone is 1:25. If its curved surfaced area is 550 cm^2 find its radius.

(11) Write a Quadratic eqn whose roots are the Values of $\sin 30^\circ$ & $\cos 60^\circ$

(12) In an arithmetic progression, first term '1', last term is 20 and the sum of all the term is 399, then find the number of terms in the Progression.

(13) An observer standing at a distance of 50m from the foot of a tower observes its top at an angle of elevation of 45°. Draw suitable diagram.

(14) whether the following pair of linear equations represents parallel lines? Justify your answer.
$2x+3y=10$ and $6x+9y=15$.

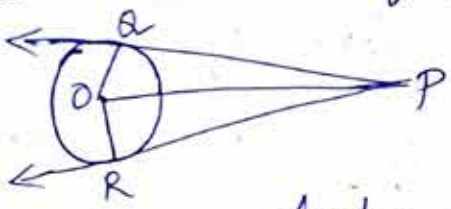
(15) Express $\tan\theta$ in terms of '$\sin\theta$'.

(16) Construct a Quadratic equation having the roots $\log_2 8$ and $\operatorname{cosec} 30^\circ$

(17) The top of the tower is observed at an angle of elevation of 45° and foot of the

tower is at the distance of 20 metres from the observer." Draw suitable diagram.

(18) In the given figure, PQ and PR are tangents to a circle with centre 'O'. If $\angle QOR = 120^\circ$, find $\angle PQO$.



(19) Construct a quadratic equation having the roots $\log_2 8$ and $\log_{10} 100$.

(20) Express "$\sin\theta$" in terms of $\tan\theta$.

(21) Express 360 as a product of prime factors.

(22) Is the pair of linear eqns $3x - 5y = 7$ and $6x - 10y = 13$ are inconsistent? Justify.

(23) AOB is the diameter of a circle with centre "O" and AC is a tangent to the circle at "A". If $\angle BOC = 130^\circ$, then find $\angle ACO$.

(24) A flag pole stands vertically on the ground. From a point which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is 45°. Draw suitable diagram.

(25) $A = \{x : x \text{ is a factor of } 18\}$,
$B = \{x : x \text{ is a factor of } 36\}$ Is $A \subset B$
Justify.

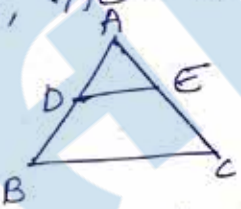
(26) Find the mean of factors of 24

(27) Express $\tan\theta$ in terms of $\cos\theta$

(28) Find the value of $\frac{\sec 37^\circ}{\operatorname{cosec} 53^\circ} - 2\cot 45^\circ + \frac{\sin 60^\circ}{\cos 30^\circ}$

(29) If the pair of linear eqns $6x - 4y + 10 = 0$ and $3x + ky + 6 = 0$ represents parallel lines graphically, then find "k"

(30) In $\triangle ABC$, DE is a line such that $AD = 3cm$, $AB = 5cm$, $AE = 6cm$ & $AC = 10cm$. Is $DE \parallel BC$?
Justify



(31) Find the centroid of the triangle whose vertices are (2,3) (−4,7) & (2,−4)

(32) Solve the quadratic eqn $2\sin^2\theta - 3\sin\theta + 1 = 0$ where $0^\circ < \theta \leq 90^\circ$

(33) The sides of a triangle measure $2\sqrt{2}$, 4 & $2\sqrt{6}$ units. Is it a right angled triangle.?

(34) Find the probability of getting a "Vowel" if a letter is chosen randomly from the word "INNOVATION"

(35) Express $\tan\theta$ in terms of $\sin\theta$

(36) "An observer standing at a distance of 10m from the foot of a tower, observe its top with an angle of elevation of 60°. Draw suitable diagram"

(37) The HCF of two numbers is 30 and their LCM is 360. If one of the numbers is 120, find the other.

(38) If $\tan\theta + \cot\theta = 2$ find $\tan^2\theta + \cot^2\theta$.

(39) Find the value of "K" if the pair of linear eqns $2x+3y+5=0$ and $6x+9y+3k=0$ represents coincident lines graphically.

(40) In $\triangle ABC \sim \triangle DEF$ and ratio of their corresponding sides is 3:4 If the area of $\triangle ABC$ is $144\,cm^2$, find the area of $\triangle DEF$.

(41) "The lengths of tangents drawn from an external point to a circle are equal" Draw a suitable diagram to prove it.

(42) Frame a quadratic eqn whose one root is 2 and the other is 1 more than twice of the first root.

SAQs

(1) Solve the following pair of equations:

$3x+4y=10$

$4x-3y=5$

(2) Two dice are rolled simultaneously and the sum of the numbers appearing on them is noted. Find the Probability of getting the sum:

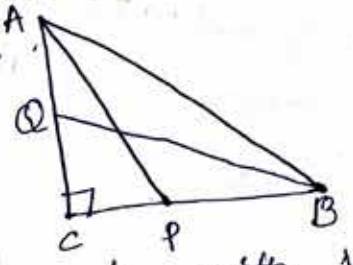
(i) 11 (ii) a Perfect Square.

(3) A girl says "The points A(6, 4), B(4, −6) and C(−2, 4) are collinear". Justify your answer.

(4) A strip of width 5 cm is attached to one side of a Square to form a rectangle. The area of the rectangle formed is 204 cm^2, then find the length of the side of the Square.

(5) Write the formula for media of a grouped data and explain each term of it.

(6) ABC is a triangle right-angled at 'C'. P and Q are points on sides CB and CA respectively. Show that $AP^2+BQ^2=AB^2+PQ^2$.



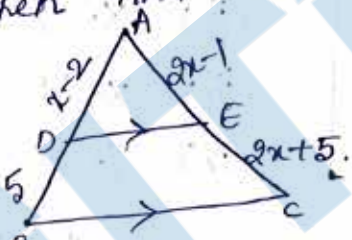
(7) Show that the triangle with vertices A(−4, 2), B(2, −4) and C(12, 6) forms a right-angled triangle.

(8) write the formula for the sum of first 'n' terms of an arithmetic progression and explain each terms in it. (1)

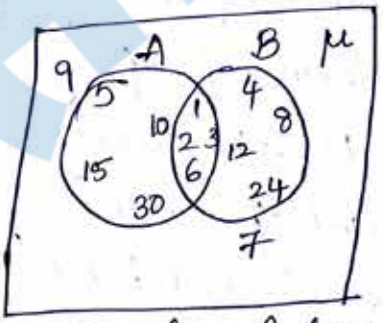
(9) From a well-shuffled deck of cards if a card is selected randomly, then find the probability of getting
(i) A red coloured king.
(ii) A black coloured face card
(iii) A diamond card with number 11 on it.
(iv) Queen of clubs.

(10) Show that $\left[\frac{1+\tan^2 A}{1+\cot^2 A}\right] = \left[\frac{1-\tan A}{1-\cot A}\right]^2 = \tan^2 A$.

(11) In $\triangle ABC$, $DE \parallel BC$, If $AD = x-2$, $DB = 5$, $AE = 2x-1$, $EC = 2x+5$, then find the value of 'x'.



(12) From the given Venn diagram, find the sets $A \cup B$, $A \cap B$, $A-B$ and $B-A$



(13) Write the formula for finding the sum of first 'n' terms of an arithmetic progression and explain each term.

(14) Prove that $\frac{1+\sin\theta}{1-\sin\theta} = (\sec\theta + \tan\theta)^2$

(15) Solve the pair of linear equations $3x+2y=11$, $2x+3y=4$

(16) Find the dimensions of a rectangle, whose perimeter is 36 cm and whose area is 65 sq.cm.

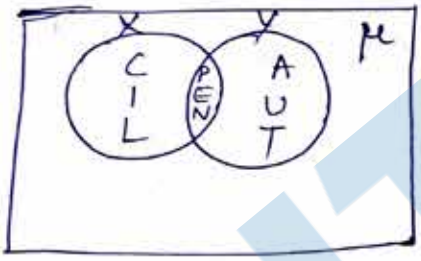
(17) If $A = \{1, 2, 3, 4, 5, 6\}$ $B = \{2, 4, 6, 8, \}$ then Show that $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

(18) Cards numbered 1 to 30 are put in a bag. If a card is drawn randomly, find the probability that the drawn card is
(i) Prime number (ii) A Perfect square.

(19) Write the formula for Mode of a grouped data and explain each term.

(20) P.T $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\operatorname{cosec}\theta$.

(21) From the Venn diagram find the following sets.



(i) $X \cup Y$
(ii) $X \cap Y$
(iii) $X - Y$
(iv) $Y - X$

(22) In an Arithmetic progression, if 4 times of fourth term is equal to 8 times of the eighth term, then Prove that twelfth term of progression is Zero.

(23) In a rectangle ABCD, $AB = 2x - y$, $BC = 15$, $CD = 2$ and $DA = x + 3y$ then find the values of x and y.

(24) 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
(i) getting a red ball (ii) getting not a Red ball.

(25) If one card is randomly selected from a well shuffled deck of cards, then find the probability of getting
(i) a face card (ii) Jack of hearts and (iii) an ace card.

(26) If $2304 = 2^x \times 3^y$ then find the value of $\log_y^x$ (5)

(27) If the zeroes of the polynomial $x^3 - 9x^2 + 26x - 24$ are $\alpha - \beta, \alpha, \alpha + \beta$ then find the values of α & β

(28) If 6 times of 6th term of an A.P is equal to 9 times of 9th term of it, then show that 15th term of that A.P is zero.

(29) write the formula for mode of a grouped data & explain each term of it.

(30) If the area of the triangle formed by joining the Points A(x, y) B(3, 2) and C(−2, 4) is 10 sq. units, then Show that $2x + 5y + 4 = 0$.

(31) If $x^2 + y^2 = 10xy$, then P.T $2\log(x+y) = \log x + \log y + 2\log 2 + \log 3$

(32) A strip of width 4cm is attached to one side of a square to form a rectangle. The area of the rectangle formed is 77cm², find the length of the side of the square.

(33) A box contains four slips numbered 1, 2, 3, 4 and another box contains five slips numbered 5, 6, 7, 8, 9. If one slip is taken randomly from each box.

(i) How many number pairs are possible.

(ii) what is the probability of both being odd.

(iii) What is the probability of getting the sum of numbers 10?

(34) which term of the A.P 21, 18, 15, ... is −81 Also find the term which becomes zero.

(35) How many two digit numbers are divisible by "3"

(36) Show that $\frac{1+\sin\theta}{\cos\theta} + \frac{\cos\theta}{1+\sin\theta} = 2\sec\theta$.

(37) A jar contains 32 marbles out of which some are red and others are green. The probability of drawing a red marble from the jar is $\frac{3}{4}$. Find the number of green marbles in the jar.

(38) write the multiples of 3 less than 25 in the Set-builder form and roaster form.

(39) The vertices of a triangle are $(-4, 6)$, $(a, -2)$ and $(2, b)$. Its centroid is $(0, 3)$ find 'a' & 'b'.

(40) If the Sum of first 'n' terms of an AP is given by $S_n = 5n^2 + 3n$, find nth term of the A.P.

ESSAY

(1) If the sum of first 8 terms of an arithmetic progression is 64 and the sum of first 17 terms is 289, then find the sum of first 50 terms

(2) show that $\frac{\sin\theta}{1-\cos\theta} + \frac{1-\cos\theta}{\sin\theta} = 2\operatorname{cosec}\theta$, where '$\theta$' is an acute angle.

(3) The volume of a solid cuboid is 210 cm^3 and its lateral surface area is 130 cm^2. If its height is 5cm, then find its length and breadth.

(4) Find the mode for the following data.

Class Interval	Frequency
0 - 10	3
10 - 20	16
20 - 30	26
30 - 40	31
40 - 50	16
50 - 60	8

(5) Construct an equilateral triangle ABC with side BC = 6 cm. Then construct another triangle similar to $\triangle ABC$ whose sides are $\frac{3}{2}$ times of the corresponding sides of $\triangle ABC$.

(6) Draw the graph of the quadratic polynomial $P(x) = x^2 + x - 6$ and find the zeros of the polynomial from the graph.

(7) A metallic vessel is in shape of a cylinder surmounted over a hemisphere. The radii of cylinder and hemisphere are same and the height of the cylinder part is 10 cm. If the outer surface area of the vessel is 748 cm^2, then find their radii.

(8) Find the coordinates of the points which divide the line segment joining the points A(-2, 2) and B(2, 8) into four equal parts.

(9) If $x^2 + y^2 = 27xy$, then show that $2\log(x-y) = 2\log 5 + \log x + \log y$.

(10) Draw a circle of radius 3cm. construct a pair of tangents to the circle from an external point which is at a distance of 8cm from the centre of the circle.

(11) Find the mode of the following data:

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	7	14	13	12	20	11	15	8

(12) Draw the graph of the polynomial $p(x) = x^2 + 2x - 3$ and find Zeros of the polynomial from the graph.

(13) A solid toy is in the form of a right circular with a hemispherical shape at one end and a cone at the other end. Their common diameter is 4.2 cm and the height of the cylindrical and conical portion are 12 cm and 7 cm respectively. Find the volume of the solid toy [Take $\pi = \frac{22}{7}$]

(14) Find the coordinates of the points of trisection of the line segment joining the points A(2, -2) & B(-7, 4)

(15) Construct a triangle ABC with AB = 6cm, AC = 6cm & BC = 8cm. construct another triangle similar to ΔABC, whose sides are 2/3 times of the corresponding sides of ΔABC.

(16) Find the mode of the following data.

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	8	20	12	7	5

(17) Draw the graph of the quadratic polynomial $p(x) = x^2 + x - 6$ and find the zeros of the polynomial from the graph.

(18) If $x^2 + y^2 = 34xy$, then prove that $2\log(x+y) = 2\log 6 + \log x + \log y$.

(19) Due to heavy floods in the state thousands were rendered homeless. The state govt decided to provide canvas for 1500 tents. The lower part of each tent is cylindrical of base radius but of height 2.1 meters and height 3.5 meters with conical upper part of same base radius but of height 2.1 meters If the canvas used to make the tent costs Rs 100 per square meter, find the total cost of canavas to construct the tents.

(20) The three vertices of a parallelogram ABCD are A(-1, -2), B(4, -1) and C(6, 3). Find the coordinates of vertex D and find the area of parallelogram ABCD.

(21) Construct a triangle ABC with AB = 5.6 cm, BC = 7.2 cm and CA = 4.8 cm. construct another triangle similar to ΔABC, whose sides are 3/5 times of the corresponding sides of ΔABC.

(22) Find the Arthematic mean of the following data.

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	11	14	15	20	15	13	12

(23) Draw the graph of the quadratic polynomial $p(x) = x^2 + x - 12$ and find the zeroes of the polynomial from the graph.

(24) prove that $3\sqrt{5} + \sqrt{7}$ is and irrational number.

(25) show that the quadrilateral formed by joining the points (-4,2), (4,4), (2,12) and (-6,10) taken in order is a square.

(26) If two boys standing on either side of their school building of height 20m, observed the top of it with angles of elevation of 30° & 60° respectively, then find the distance between two boys.

(27) Construct a circle of radius 5 cm. Then a pair of tangents to the circle such that the angle between them is 60°.

(28) Find the arthmetic mean of the following data

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	7	14	13	12	20	11	15	8

(29) The numerator of a fraction is 3 less than its denominator. If 2 is added to both numerator and denominator, the sum of the new fraction formed and orginal fraction is $\frac{29}{20}$, then find the original fraction.

(30) Draw the graph of the polynomial $p(x) = x^2 + 2x - 3$ and find the zeroes of the polynomial from the graph.

(31) prove that $2\sqrt{3} + \sqrt{5}$ is an irrational number.

(32) Construct triangle ABC with BC = 7cm $\angle B = 45°$ and $\angle C = 60°$. Then construct another triangle similar to $\triangle ABC$, whose sides are 3/5 times of the corresponding sides of $\triangle ABC$.

(33) If A(-2,2), B(a,6), C(4,b) and D(2,-2) are the vertices of a parallelogram ABCD, then find the values of a and b. Also find the lengths of its sides.

(34) Find the mode for the following data

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

(35) In an acute angled triangle ABC, if $\sin(A+B-C) = \frac{1}{2}$ and $\cos(B+C-A) = \frac{1}{2}$, then find $\angle A$, $\angle B$ and $\angle C$

(36) Draw the graph of the quadratic polynomial $p(x) = x^2 - 4x + 3$ and find the zeroes of the polynomial from the graph

(37) A cylindrical bucket, 32 cm high and with radius of base 18 cm is filled with sand. This bucket is emptied out on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the heap. [Take $\pi = \frac{22}{7}$]

(38) Solve the pair of linear equations.

$$\frac{8}{x} + \frac{3}{y} = 7$$

$$\frac{2}{x} + \frac{5}{y} = 6$$

(39) 2 men are on opposite side of a tower. They observe the angles of elevation of the top of the tower as 30° and 45° respectively. If the height of the tower is 50 meters, find the distance between the 2 men.

(40) Draw a pair of tangents to a circle of radius 4 cm which are inclined at an angle of 60°.

(41) Find the Arithmetic mean of the following data.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	8	15	35	22	14	6

(42) Draw the graph of the polynomial $P(x) = x^2 + 2x - 8$ and find the zeroes of the polynomial from graph