ANDHRA PRADESH

SSLC

CLASS 10

2023



QUESTION PAPER

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Question Booklet Sl. No. 4111291

MATHEMATICS

(English Version)

Time : 3 Hours 15 Minutes

Max. Marks : 100

Instructions :

1) In the duration of **3** hours **15** minutes, **15** minutes of time is allotted to read the question paper.

2) **All** answers shall be written in the answer booklet **only**.

3) Question paper consists of **4** Sections and **33** questions.

4) Internal choice is available in Section **IV only**.

5) Answers shall be written **neatly** and **legibly**.

SECTION – I (12×1=12)

Note : 1) Answer **all** the questions in **one** word or **a** phrase.

2) **Each** question carries **1** mark.

1. Find the LCM of 12, 15 and 21.

2. Write the following set in roster form :

A = {x : x is a natural number less than 6}.

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3. Choose the correct answer satisfying the following statements :

Statement (P) : The degree of the quadratic polynomial is 2.

Statement (Q) : Maximum no. of zeroes of a quadratic polynomial is 2.

(A) Both (P) and (Q) are true

(B) (P) is true, (Q) is false

(C) (P) is false, (Q) is true

(D) Both (P) and (Q) are false

4. **Assertion** : $3x + 6y = 3900$, $x + 2y = 1300$ represent coincident lines and have infinite number of solutions.

Reason : If $a_1x + b_1y = c_1$

$a_2x + b_2y = c_2$ and $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ then, these lines are coincident lines.

Choose the correct answer.

(A) Both Assertion and Reason are true, Reason is supporting the Assertion

(B) Both Assertion and Reason are true, But Reason is not supporting the Assertion

(C) Assertion is true, but the Reason is false

(D) Assertion is false, but the Reason is true

5. The number of roots of the equation $5x^2 - 6x - 2 = 0$ is _____

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6. State Thales theorem.

7. Find the number of tangents drawn at the end points of the diameter.

8. Find the volume of a cube, whose side is 4 cm.

9. Match the following :

P)	$\sin\theta$	i)	$1/\sec\theta$
Q)	$\cos\theta$	ii)	$\sqrt{\sec^2\theta - 1}$
R)	$\tan\theta$	iii)	$\sqrt{\frac{\sec^2\theta - 1}{\sec^2\theta}}$

Choose the correct answer.

(A) P → (i), Q → (ii), R → (iii)

(B) P → (iii), Q → (i), R → (ii)

(C) P → (iii), Q → (ii), R → (i)

(D) P → (i), Q → (iii), R → (ii)

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10. "You are observing top of your school building at an angle of elevation 60° from a point which is at 20 meters distance from foot of the building".
Draw a rough diagram to the above situation.

11. If P(E) = 0.05, what is the probability of not 'E' ?

12. Find the mean of the given data.
2, 3, 7, 6, 6, 3, 8

SECTION – II (8×2=16)

Note : 1) Answer **all** the questions.
2) **Each** question carries **2** marks.

13. If A = {3, 4, 5, 6}, B = {5, 6, 7, 8, 9}, then illustrate A ∩ B in Venn diagram.

14. 6 pencils and 4 pens together cost ₹ 50 whereas 5 pencils and 6 pens together cost ₹ 46.
Express the above statements in the form of Linear equations.

15. Check whether $(x-2)^2 + 1 = 2x - 3$ is a quadratic equation or not.

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16. Write the formula to find n^{th} term of A.P. and explain the terms in it.

17. Find the distance between the two points (7, 8) and (–2, 3).

18. From a point Q, the length of the tangent to a circle is 24 cm, and the distance of Q from the centre is 25 cm. Find the radius of the circle.

19. If $\cos A = \frac{12}{13}$, then find sinA and tanA.

20. A die is thrown once, find the probability of getting

i) a prime number

ii) an odd number.

SECTION – III

(8×4=32)

Note : 1) Answer **all** the questions.

2) **Each** question carries **4** marks.

21. Find 'x', if $2 \log 5 + \frac{1}{2} \log 9 - \log 3 = \log x$.

22. Check whether –3 and 3 are the zeroes of the polynomial $x^4 - 81$.

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23. Solve the pair of linear equations using elimination method.

$3x + 2y = -1$

$2x + 3y = -9$

24. Rohan's mother is 26 years older than him. The product of their ages after 3 years will be 360 years. Write the quadratic equation to find Rohan's present age.

25. Draw a tangent to a given circle with centre 'O' from a point 'R' outside the circle. How many tangents can be drawn to the circle from that point ?

26. An oil drum is in the shape of a cylinder having the following dimensions :
Diameter is 2 m and height is 7 meters. The painter charges ₹ 3 per m^2 to paint the drum. Find the total charges to be paid to the painter for 10 drums.

27. Show that $\frac{1 - \tan^2 A}{\cot^2 A - 1} = \tan^2 A$.

28. A survey conducted on 20 households in a locality by a group of students resulted in the following frequency table for the number of family members in household.

Family size	1 – 3	3 – 5	5 – 7	7 – 9	9 – 11
No. of families	7	8	2	2	1

Find the mode of the data.

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SECTION – IV

(5×8=40)

Note : 1) Answer **all** the questions.

2) **Each** question carries **8** marks.

3) **Each** question has **internal** choice.

29. a) Prove that $6 + \sqrt{2}$ is irrational.

OR

b) Show that $a_1, a_2, a_3, \ldots, a_n$ form an AP where a_n is defined as below.

i) $a_n = 3 + 4n$ ii) $a_n = 9 - 5n$

Also find the sum of the first 15 terms in each case.

30. a) Find the volume of the largest right circular cone that can be cutout of a cube whose edge is 7 cm.

OR

b) If A = {1, 2, 3, 4, 5}; B = {3, 4, 5, 6, 7}; C = {1, 3, 5, 7}; D = {2, 4, 6, 8}

Find : i) $A \cup B$ ii) $B \cup C$ iii) $A \cup D$ iv) $B - D$

v) $A \cap B$ vi) $B \cap D$ vii) $C \cap D$ viii) $A - D$

31. a) The distribution below gives the weights of 30 students of class. Find the median weight of the students.

Weight (in kg)	40 – 45	45 – 50	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75
Number of students	2	3	8	6	6	3	2

OR

b) Find the value of 'b' for which the points A(1, 2), B(–1, b), C(–3, –4) are collinear.

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32. a) A 1.5 m tall boy is looking at the top of a temple which is 30 meter in height from a point at certain distance. The angle of elevation from his eye to the top of the crown of the temple increases from 30° to 60° as he walks towards the temple. Find the distance he walked towards the temple.

OR

b) One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

i) a king of red colour

ii) a face card

iii) a jack of hearts

iv) a spade.

33. a) Construct a triangle of sides 5 cm, 5 cm and 6 cm. Then, construct a triangle similar to it, whose sides are 2/3 of the corresponding sides of the triangle.

OR

b) Draw a graph of $p(x) = x^2 - 3x - 4$ and hence find the zeroes of the polynomial.

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