



Padalsalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- Padalsalai's NEWS - Group
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA
- Padalsalai's Channel - Group
<https://t.me/padasalaichannel>
- Lesson Plan - Group
<https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw>
- 12th Standard - Group
https://t.me/Padalsalai_12th
- 11th Standard - Group
https://t.me/Padalsalai_11th
- 10th Standard - Group
https://t.me/Padalsalai_10th
- 9th Standard - Group
https://t.me/Padalsalai_9th
- 6th to 8th Standard - Group
https://t.me/Padalsalai_6to8
- 1st to 5th Standard - Group
https://t.me/Padalsalai_1to5
- TET - Group
https://t.me/Padalsalai_TET
- PGTRB - Group
https://t.me/Padalsalai_PGTRB
- TNPSC - Group
https://t.me/Padalsalai_TNPSC

SUB: MATHS

CLASS: II

BASIC ALGEBRA

MARKS: 70

I Answer any SEVEN questions: (30 is compulsory)

7 x 2 = 14

21. Find a positive number smaller than $\frac{1}{2^{1000}}$. Justify.
22. Solve $|2x - 17| = 3$ for x .
23. Solve $|x - 9| < 2$ for x .
24. Solve $3x - 5 \leq x + 1$ for x .
25. Construct a quadratic equation with roots 7 and -3.
26. Find the roots of the polynomial equation $(x-1)^3(x+1)^2(x+5)=0$ and state their multiplicity.
27. Simplify: $(125)^{2/3}$
28. Solve $(x+1)^{1/3} = \sqrt{x-3}$
29. Solve $x^{\log_3 x} = 9$
30. Compute $\log_3 5 \log_{25} 27$

III Answer any SEVEN questions.

(Question 40 is compulsory)

7 x 3 = 21

31. Prove $\log \frac{75}{16} - 2 \log \frac{5}{9} + \log \frac{32}{243} = \log 2$
32. Find the logarithm of 1728 to the base $2\sqrt{3}$
33. Simplify by rationalising the denominator. $\frac{7+\sqrt{6}}{3-\sqrt{2}}$
34. Shade the region given by the linear inequality $x + 2y > 3$

35. Resolve into partial fractions: $\frac{2x}{(x^2+1)(x-1)}$
36. Resolve into partial fraction: $\frac{1}{x^2-a^2}$
37. Find all values of x for which $\frac{2x-3}{(x-2)(x-4)} < 0$
38. If x^2+x+1 is a factor of the polynomial $3x^3+8x^2+8x+a$, then find the value of a .
39. If α and β are the roots of the equation $x^2+\sqrt{2}x+3=0$ form a quadratic polynomial with zeros $\frac{1}{\alpha}, \frac{1}{\beta}$.
40. Solve $2|x+1|-6 \leq 7$ and graph the solution set in a number line.

IV Answer all the question:

$$7 \times 5 = 35$$

41. Our monthly electricity bill contain a basic charge, which does not change with number of units used, and a charge, that depends only on how many units we use. Let us say Electricity Board charges Rs. 110 as basic charges and charges Rs. 4 for each units we use. If a person wants to keep his electricity bill below Rs. 250, then what should be his electricity usage?

(or)

Find the number of solutions of $x^2+|x-1|=1$

42. If the difference of the roots of the equation $2x^2 - (a+1)x + a - 1 = 0$ is equal to their product then prove that $a = 2$

(or)

A quadratic polynomial has one of its zeros $1 + \sqrt{5}$ and it satisfies $p(1) = 2$. Find the quadratic polynomial.

43. solve $3x^2 + 5x - 2 \leq 0$

(or)

solve $\sqrt{x+14} < x+2$

44. Find the real roots of $x^4 = 16$

(or)

use the method of undetermined coefficient to find the sum of $1+2+3+\dots+(n-1)+n$, $n \in \mathbb{N}$

45. The equations $x^2 - 6x + a = 0$ and $x^2 - bx + 6 = 0$ have one root in common. The other root of the first and second equations are integers in the ratio 4:3. Find the common root.

(or)

solve $\frac{x+1}{x+3} < 3$

46. Resolve into partial fraction: $\frac{x^2+x+1}{x^2+2x+1}$

(or)
Resolve into partial fraction: $\frac{6x^2-x+1}{x^3+x^2+x+1}$

47. shade the region given by the linear inequalities.

$$2x+y \geq 8, \quad x+2y \geq 8, \quad x+y \leq 6.$$

(or)

If $\log_2 x + \log_4 x + \log_{16} x = \frac{7}{2}$, find the value of x .

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48. If $(1-a)^2 + (1-b)^2 + (1-c)^2 = 0$, find the value of $a+b+c$.

49. If a, b, c are in A.P. and a^2, b^2, c^2 are in P.A., find the value of $\frac{a}{b} + \frac{b}{c} + \frac{c}{a}$.

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