INFINITY
THINK BEYOND.............
AN EDUCATIONAL INSTITUTE

SUBJECT:MATHS   MAX. MARKS : 40
DATE : 29/11/24   DURATION : 90 min

PBMT – 06
UNIT – ALGEBRA
Ch – 2 Polynomial
Ch – 3 Linear equation in one variables
Ch – 4 Quadratic Equation Ch – 5 Arithmetic Progression

General Instruction:
This Question Paper has 5 Sections A-E.
1. Section A has 6 MCQs carrying 1 mark each.
2. Section B has 3 questions carrying 02 marks each.
3. Section C has 3 questions carrying 03 marks each.
4. Section D has 1 questions carrying 04 marks each.
5. Section E has 3 questions carrying 05 marks each .
Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

SECTION – A
Questions 1 to 6 carry 1 mark each.

1. The pair of equations x = 4 and y = 3 graphically represents lines which are
(a) parallel   (b) intersecting at (3,4)
(c) coincident   (d)intersecting at (4,3)

2. The next term of the A.P $\sqrt{18}$, $\sqrt{50}$, $\sqrt{98}$ ...... is
(a) $\sqrt{146}$ (b) $\sqrt{148}$ (c) $\sqrt{162}$ (d) $\sqrt{200}$

3. The value of k for which the system of equations x + y – 4 = 0 and 2x + ky = 3 , has no solution is
(a) -2   (b) $\neq$ 2   (c) 3   (d) 2

4.If the sum of first n terms of an AP is $An + Bn^2$ Where A and B are contants ,the common difference of AP will be
(a) A + B   (b) A-B   (c) 2A   (d) 2B

5.The value of k for which the equation $x^2 + 2(k + 1)x + k^2 = 0$ has equal roots is
(a) -1   (b) $-\frac{1}{2}$ (c) 1   (d) none of these

6. The pair of equations ax + 2y = 7 and 3x + by = 16 represent parallel lines if
(a) a = b   (b) 3a = 2b   (c) 2a = 3b   (d) ab = 6

SECTION – B
Questions 7 to 9 carry 2 mark each.

7. Solve the following for x .
$4x^2 – 4a^2x + (a^4 – b^4) = 0$

8. The sum of the squares of three consecutive positive integers is 50.Find the integers .

OR

Find the value of p , for which one root of the quadratic equation $px^2 – 14x + 8 = 0$ is 6 times the other .

9. The tenth term of an A.P. and the sum of its first six terms is -27. Find the sum of its first eight terms.

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SECTION – C
Questions 10 to 12 carry 3 mark each.

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10. A train covered a certain distance at a uniform speed. If the train had been 6km /hr faster, it would have taken 4 hours less than the scheduled time. Conversely , if the train were slower by 6kmhr slower , it would have taken 6$hours$ more than the scheduled time. Find the length of the journey .

11. If α and β are the zeroes of the quadratic polynomial p(x) = $x^2 - 5x + 4$,then find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - 2\,\alpha\beta$.

12. Solve for x and y : 6 (ax + by) = 3a + 2b ; 6(bx – ay) = 3b – 2a
<div style="text-align:center">OR</div>
solve for x and y : 217x + 131 y = 913   ;   131 x + 217 y = 827 .

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SECTION – D
Questions 13 carry 4 mark each.

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13. Treasure Hunt is an exciting and adventurous game where participants follow a series of clues/numbers/maps to discover hidden treasures. Players engage in a thrilling quest, solving puzzles and riddles to unveil the location of the coveted prize. While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forming an A.P. If the number on the nth spot is 20 + 4n, then answer the following questions to help the players in spotting the clues.

(i) Which number is on first spot?

(ii). (a) Which spot is numbered as 112?
<div style="text-align:center">OR</div>
(b) What is the sum of all the numbers on the first 10 spots ?

(iii). Which number is on the (n - 2)th spot?

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SECTION – E
Questions 14 to 16 carry 5 mark each

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14. A motor boat whose speed is 18km/h in still water takes 1 hour more to go 24km upstream than to return downstream to the same spot .Find the speed of stream .

15. A taxi charges a base fare plus a certain amount for each kilometer .The rates are shown in the table below .

Distance in km	1	2	3	4
Fare in rupees	45	60	75	90

Based on the above information , answer the following :

(i) What is the base fare ?
(ii) What is the fare per km ?
(iii) What is the fare travel 16 km ?

16. The students of a class are made to stand in each rows. If one student is extra in a row ,there would be 2 rows less .If one student is less in each row ,there would be 3 rows more . Find the total number of students in the class.

_____**End**_____

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