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RISE UP अॅकॅडमी

इयत्ता : 5 वी ते 10 वी
आदर्श कॉलनी, औसा रोड, बरमदे हॉस्पिटल जवळ, लातूर

Class: 10 English / Semi-English (State) Subject : Algebra Total Marks: 40

Date: Time:

10th Algebra 40 Marks

Q.1) A) Choose the correct alternative for the following questions [04]

1) Write the given quadratic equation in standard form $x + 1/x = 4$

a) $x^2 - 4x + 1 = 0$ b) $x^2 + 4x - 1 = 0$ c) $x^2 - 4x - 1 = 0$ d) $x^2 - 4x = 40$

2) For an A. P. a = 101, d = -4 then, what is the value of n, if $t_n = 57$.

a) 9 b) 10 c) 11 d) 12

3) Sum of first five multiples of 3 is --------

a) 45 b) 55 c) 15 d) 75

4) If a = 3, n = 8, $S_8 = 192$ find d.

a) 3 b) 4 c) 5 d) 6

Q.1) B) Solve the following questions [04]

1) Find second and third term of an A. P. whose first term is -2 and common difference is -2.

2) 108, 108, 108, ----- is an A. P. find a and d.

3) Write an AP whose first term is a and common difference d is given : a = -19, d = -4

4) Identify the following sequence are in A.P.? If they are A.P. find common difference : 2, 4, 8, 6, -----

Q.2) A) Complete any two activities [04]

1) Find the sum of all odd numbers from 1 to 150. For this complete the following activity: odd numbers from 1 to 150 are 1, 3, 5, -----, 149.

The above sequence is an A. P. Here, a = 1, t_n = ☐, n = 75 S_n = ☐ --------- [------]

∴ S_{75} = ☐ (150) = ☐

2)

Value of Discriminant	50	-30	0	15
Nature of Root	----	----	----	----

3) Write the correct number in the given boxes from the following A. P. : 3, 6, 9, 12, ------

Here t_1 = ☐, t_2 = ☐, t_3 = ☐, t_4 = ☐ $t_2 - t_1$ = ☐ , $t_3 - t_2$ = ☐ ∴ d = ☐

Q.2) B) Solve any Four sub questions [08]

1) There are 25 rows of seats in an auditorium. The first row is of 20 seats, the second of 22 seats, the third of 24 seats and so on. How many chairs are there in the 21st row?

2) The first term and the common difference of an A. P. is 10000 and 2000 respectively. Find the sum of first 12 terms of the A. P.

3) The first term and the common difference of an A. P. is 10 and 5 respectively. then find sum of first 30 terms of the A. P.

4) Find how many three digit natural numbers are divisible by 5?

5) First term and common difference of an A. P. are 12 and 4 respectively. if $t_n = 96$, find n.

Q.3) A) Complete any One activity [03]

1) A village has 4000 literate people in the year 2010 and this number increases by 400 per year. How many literate people will be there till year 2020?
Here, a = □, d = □, n = □ $t_n = a + (n - 1)\, d$ = □ = □ ∴ There will be □ literate people till year 2020.

2) Two given A. P. are 8, 6, 4, --- and 24, 21, 18, -----. If nth term of both the progressions are equal then find the value of n.
The first A. P. is 8, 6, 4, ---- here a = 8, d = □ nth term (t_n) = a + (n – 1) d = 8 + (n – 1) □ = □
The second A. P. is 24, 21, 18, ------ here, a = 24, d = 21 – 24 = -3 nth term (t_n) = □ = 24 + (n – 1) (-3) = □
Since, the nth term of two A. P's are equal.
10 – 2n = 27 – 3n ∴ n = □

Q.3) B) Solve any Two sub questions [06]

1) Solve the quadratic equation by formula method : $5x^2+13x+8=0$

2) If 460 is divided by a natural number, quotient is 6 more than 5 times the divisor and remainder is 1 then find quotient and divisor.

3) Product of Pragati's age 2 years ago and three years hence is 84. Find her present age.

4) Solve the quadratic equation by formula method : $x^2+6x+5=0$

Q.4) Solve any Two sub questions [08]

1) Find the sum of all natural numbers amongst first one thousand numbers which are neither divisible by 2 or by 5. [Hint: Number divisible by 2 and divisible by 5 have some numbers common]

2) A mixture manufacturing company manufactured 600 mixers in 3rd year and in 7th year they manufactured 700 mixers. If every year there is same growth in the production of mixers then find (i) Production in the first year (ii) Production in 10th year (iii) Total production in first seven years.

3) If pth, qth, rth term of an A. P. is x, y and z respectively. show that, x(q – r) + y (r – p) + z (p – q) = 0

Q.5) Solve any One sub question [03]

1) If α and β are the roots of the quadratic equation $x^2 - 2x - 7 = 0$, find the value of $\alpha^2 + \beta^2$.

2) The sum of the 3rd and 7th terms of an A. P. is 54 and the sum of the 5th and 11th terms is 84. Find the A. P.