Father Agnel school   chitrangda

FAS/Mathematics (041)/VIII/SA-1, 2014-15

Time : 3 hrs.]   [M. M. : 90

General Instructions :

    (1) *All questions are compulsory.*

    (2) *Question 1 – 8 carry 1 mark each.*

    (3) *Questions 9 – 14 carry 2 marks each.*

    (4) *Questions 15 – 24 carry 3 marks each.*

    (5) *Questions 25 – 34 carry 4 marks each.*

Section—(A)

1   Is $\dfrac{9}{10}$ the multiplicative inverse of $-1\dfrac{1}{9}$? Give reason for your answer.

2   Express $-\dfrac{343}{1331}$ in exponential form.

3   Write $(15)^2$ as the sum of two consecutive positive numbers.

4   Find the cube of 0.09

5   Using a simple substitution code, the word 'SNOW' is written as 'RMNV'. Using the same code, decode the word 'NBSNADQ'.

6   Find the product : $(7y) (3y^2 - 6y + 8)$

7   Divide :

$$12x^3 - 6x^2 + 7x \text{ by } 3x$$

8   Find the class size and the class mark of the interval $25 - 35$.

Section—(B)

9   Find four rational numbers between $-\dfrac{3}{4}$ and $\dfrac{5}{6}$

10   Evaluate : $\left(\dfrac{2}{3}\right)^0 + \left(\dfrac{4}{5}\right)^0 \div \left(\dfrac{1}{2}\right)^2$

F–220   (P.T.O.)

11   Find the smallest number by which 180 should be multiplied so as to get a perfect square.

12 (a) Replace (*) by the smallest digit so that 323*1 is divisible by 9.

   (b) Write the next number in the following series :

       9, 16, 25, 36, ...4.9...,

13   Evaluate $(99)^2$ using identities.

14   Solve :

$$3x + \frac{1}{2} = \frac{3}{8} + x$$

Section–(C)

15   Verify the property, $a \times (b + c) = a \times b + a \times c$, for $a = -\frac{3}{4}$, $b = \frac{5}{6}$ and

$c = \frac{2}{3}$. Also name the property verified.

16   Evaluate :

$$\left[\left(\frac{-6}{12} \right)^{-1} \times \left(\frac{12}{7} \right)^{-1} \right] \div \left(\frac{3}{7} \right)^{-1}$$

17   Find the greatest number of four digits, which is a perfect square.

18   The volume of a cube is 91.125 cubic metres. Find the edge of the cube.

19   Make a 3×3 magic square with magic sum 60.

20   Find the following products :

   (a) $(7x + 5)(7x - 5)$

   (b) $(x + y)(x^2 - xy + y^2)$

21   What must be subtracted from $2a^3 + 5a^2 + 8a + 4$ so that the result is exactly divisible by $2a + 1$?

22   Solve :

$$\frac{4x+3}{4} - \frac{2x-1}{3} = x + \frac{5}{12}$$

23   The electricity bills (in Rs.) of 25 houses of a certain locality for a month are given below :

700, 324, 400, 617, 365, 435, 548, 506, 736, 780, 378, 685, 570, 312, 630, 584, 674, 776, 754, 596, 745, 763, 565, 472, 350

Find the range of the data and prepare a frequency distribution table using suitable class intervals.

24   Draw a histogram for the following table :

Marks obtained	30–40	40–50	50–60	60–70	70–80	80–90	90–100
Number of Students	2	1	2	6	6	7	6

Section—(D)

25   A floor is $2\frac{1}{4}$ m long and $1\frac{1}{4}$ m wide. It has to be covered with square tiles of side $\frac{1}{4}$ m each. Find the number of tiles needed to cover the whole floor.

26 (a) Evaluate :

$$(-7)^6 \div (-7)^{-6} = (-7)^{4m}$$

   (b) Write the following numbers in scientific notation :

   (i) 41003440   (ii) 0.000000767

27   The length and breadth of a rectangular garden is 50 m and 40 m respectively. Find the length of the diagonal, correct up to two places of decimal.

28 The sum of the cubes of three numbers which are in the ratio 1 :2 : 3 is 972. Find the numbers.

29 (a) Expand using identities :

$(9a^2 - 11b^2)\ (9a^2 + 11b^2)$

(b) If $x + y = 6$ and $xy = 5$, find the value of $x^2 + y^2$

30 Factorize :

(a) $a^2x^2 + b^2y^2 + b^2x^2 + a^2y^2$

(b) $3x^2 + 10x + 8$

31 The numerator of a fraction is 2 less than its denominator. If the denominator is increased by 9 and numerator by 3, we get the fraction as $\dfrac{1}{2}$. Find the fraction.

32 A number consists of two digits whose sum is 8. If 18 is added to the number, the digits interchange their places. Find the number.

33 A train covers 280 km in $3\dfrac{1}{2}$ hours. Find the speed of the train and the distance covered by the train in 5 hours.

34 Draw a pie-chart to represent the data.

Items	Food	Clothing	Hous rent	Education	Saving
Expenditure (in Rs.)	1800	1200	2400	1000	800