Sample Paper – 2014
Class – X
Subject – Mathematics

REAL NUMBER ; POLYNOMIAL; LINEAR EQUATION & STATISTICS

TIME 1 Hr – 30 min   Marks : 55

Instruction :

1. All questions are compulsory.

2. Question no 1 to 8 MCQ carrying 1 marks.

3. Question no 9 to 14 short answer type question carrying 2 marks.

4. Question no 15 to 19 short answer type question carrying 3 marks.

5. Question no 20 to 24 long answer type question carrying 4 marks.

SECTION A

1   π is

    (i)   An integer

    (ii)   A rational number

    (iii)   An irrational number

    (iv)   None of these

2   The system of equations $x + 3y = 5$ and $4x + 6y = 15$

    (i)   Is consistent

    (ii)   Have a unique solution

    (iii)   Have a many solutions

    (iv)   None of these.

3   The graphically representation of a cumulative frequency distribution is called

    (i)   Bar graph

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(ii)   Histogram

(iii)   Frequency polygon

(iv)   An ogive

4   For a given data with 70 observations, less than ogive and more than ogive intersect at $(20.5, 35)$. The median of data is

(i)   20

(ii)   35

(iii)   70

(iv)   20.5

5   If one zero of the quadratic polynomial $4x^2 + kx - 1$ is 1, then the value of k is equal to :

(i)   5

(ii)   −5

(iii)   3

(iv)   −3

6   The relation connecting the measure of central tendency is :

(i)   Mode = 2 Median − 3 Mean

(ii)   Mode = 3 Median − 2 Mean

(iii)   Mode = 2 Median + 3 Mean

(iv)   Mode = 3 Median + 2 Mean

7   If $\alpha \ and \ \beta$ are roots of the polynomial $ax^2 - bx + c$ then $\alpha + \beta$ is

(i) $-\dfrac{b}{a}$

(ii) $\dfrac{b}{a}$

(iii) $\dfrac{c}{a}$

(iv) $\qquad -\dfrac{c}{a}$

8 Given positive integers p and q such that p = m × q + n, where m and n are unique integers, then

(i) n = 1

(ii) $0 < n \le q$

(iii) $0 \le n < q$

(iv) $n > q$

SECTION B

9 Express $0.3\overline{6}$ as a fraction in simplest form.

10 Write the following distribution as more than type cumulative frequency distribution.

Class Interval	Frequency
50 – 55	2
55 – 60	6
60 – 65	8
65 – 70	14
70 – 75	15
75 – 80	5

11 If the HCF of 54 and 336 is 6, find their LCM.

12 Calculate the mode when mean is 146 and median is 130.

13 Find the missing number in prime factors tree.
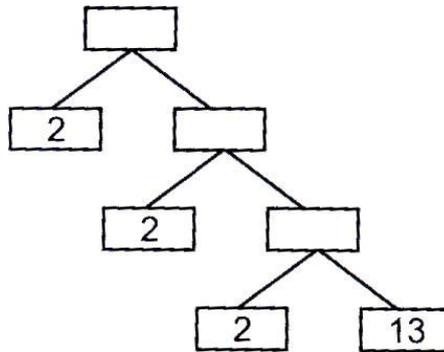
14 Explain why $7 \times 11 \times 13 + 13$ is a composite number.

SECTION C

15 Prove that $3 + \sqrt{2}$ is an irrational number.

16 Five years ago, Ramesh was thrice of Shyam's age. Ten years later, Ramesh will be twice of Shyam's age. How old are Ramesh and Shyam?

17 Find the mode of the following data:

Class Interval	Frequency
10 – 20	4
20 – 30	8
30 – 40	10
40 – 50	12
50 – 60	10
60 – 70	4
70 – 80	2

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18 If α and β are the zeroes of the polynomial $f(x) = 3x^2 = 6x + 4$, find

the value of $\dfrac{\alpha}{\beta} + \dfrac{\beta}{\alpha}$.

19 If the median of the following data is 24. Find the value of x:

Class Interval	Frequency
0 – 10	5
10 – 20	25
20 – 30	x
30 – 40	18
40 – 50	7

SECTION D

20 Find the greatest number that will divide 445, 572 and 699 leaving reminders 4, 5 and 6 respectively.

21 Two Places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at different speeds, they meet in 5 hours. If they travel towards each other, they meet in 1 hour. What are the speeds of the two cars?

22 If the mean of the following data is 65.6. Find the missing frequencies f_1 and f_2.

Class Interval	Frequency

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10 – 30	5
30 – 50	8
50 –70	f_1
70 – 90	20
90 – 110	f_2
110 – 130	2
Total	50

23 Draw the more than cumulative frequency curve for that following. Also find the median from the graph.

Class Interval	Frequency
40 – 40	7
44 – 48	12
48 – 52	33
52 – 56	47
56 – 60	20
60 – 64	11
64 – 68	5

24 A boat covers 32 Km upstream and 36 Km downstream in 7 h. Also, it covers 40 Km upstream and 48 Km downstream in 9 hr. Find the speed of boat and stream.

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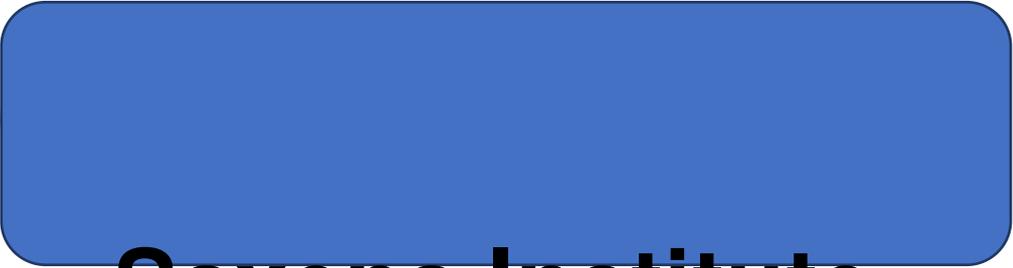
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