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PRACTICE PAPER FOR SUMMATIVE ASSESSMENT – I
2014-2015
STD:- X

Sub:- Mathematics   **Time:- 3 Hours**   **Marks:- 90**

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General Instructions:-

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into 4 sections–A, B, C, D.
   i)   Section A comprises 8 questions of 1 mark each.
   ii) Section B comprises 6 questions of 2 marks each.
   iii) Section C comprises 10 questions of 3 marks each.
   iv) Section D comprises 10 questions of 4 marks each.
3. Internal choice has been provided in some questions. You have to attempt only one of the alternatives in all such questions.

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SECTION – A

1. If LCM(77,99)=693, then HCF (77,99) is

    a) 11   b) 7   c) 9   d) 22

2. After how many decimal places, will the decimal expansion of $\dfrac{6295}{2\,5^3}$ terminate?

    a) 4 decimal places   c) 2 decimal places

    b) 3 decimal places   d) 1 decimal place

3. What is the exponent of 2 in the prime factorization of 336?

    a) 1   c) 3

    b) 2   d) 4

4. If one zero of the quadratic polynomial x^2+3x+k is 2, then the value of k is?
    a) 10   b) -10   c) 5   d) -5

5. If $y\sin 45^o \cos 45^o = \tan^2 45^0 - \cos^2 30^0$, then y=

    a) $\dfrac{-1}{2}$ b) $\dfrac{1}{2}$ c) -2 d) 2

6. If $x = a\cos\alpha$ and $y = b\sin\alpha$, then $b^2x^2+a^2y^2=$

    a) ab   b) b^2+a^2 c) a^2b^2 d) a^4b^4

7. If $\triangle ABC \sim \triangle QRP, \dfrac{ar(ABC)}{ar(PQR)}=\dfrac{9}{4}$, AB= 18 cm and BC= 15 cm, then QR is equal to

    a) 10 cm   b) 12 cm   c) $\dfrac{20}{3}$ cm   d) 8 cm

8. If the mode of a data is 45 and mean is 27, then the median is:
    a) 36   b) 30
    c) 28   d) 33

SECTION – B

9.   Explain why $3 \times 5 \times 7 + 7$ is a composite number.

10.   If one zero of the polynomial $(a^2 + 9)x^2 + 13x + 6a$ is reciprocal of the other, find the value of a.

11.   Find the value of k so that the following system of equations has no solution:

      $2x + ky = 1$, $3x – 5y = 7$

12.   A man goes 7 meter due north and then 24 meter due east. How far is he from the starting point?

13.   Prove that: $\dfrac{\cos A}{1 - \tan A} + \dfrac{\sin^2 A}{\sin A - \cos A} = \sin A + \cos A$

14.   For the following distribution the sum of the lower limits of the modal class and the median class is

classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	20	30	24	40	18

SECTION – C

15.   Use Euclid's Division Algorithm to show that the cube of any positive integer is either of the form 9q, 9q+1 or 9q+8.

16.   Prove that $\sqrt{5}$ is an irrational number.

17.   If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 + x - 2$, find a polynomial whose zeroes are $2\alpha + 1$ and $2\beta + 1$.

18.   The area of a rectangle gets reduced by 80 sq. units, If its length is reduced by 5 units and the breadth is increased by 2 units. If we increase the length by 10 units and decrease the breadth by 5 units, the area is increased by 50 sq. units. Find the length and the breadth of the rectangle.

19.   ABCD is a trapezium in which AB is parallel to DC and its diagonal intersect each other at point O. Show that $\dfrac{AO}{BO} = \dfrac{CO}{DO}$.

20.   Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

21.   Find the value of

      $(1+\tan\theta+\sec\theta)(1+\cot\theta-\text{cosec}\theta)$

22.   Evaluate: $\dfrac{\sin 70^0}{\cos 20^0} + \dfrac{\cos ec36^0}{\sec 54^0} - \dfrac{2\cos 43^0 \cos ec47^0}{\tan 10^0 \tan 40^0 \tan 50^0 \tan 80^0}$

23. If median of the following frequency distribution is 35. Find the value of x.

Class interval	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	2	3	x	6	5	3	2

24. Find the mode for the following frequency distribution of marks obtained by 80 students:

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	6	10	12	32	20

SECTION – D

25. Obtain all other zeroes of $x^4 + 4x^3 - 2x^2 - 20x - 15$, if two of its zeroes are $\sqrt{5}$ and $-\sqrt{5}$.

26. 2 men and 7boys can do a piece of work in 4 days. The same work is done is 3 days by 4 men and 4 boys. How long would it take one man and one boy to do it?

27. Form a pair of linear equation in two variables using the following information and solve it graphically:
Five years ago, Sagar was twice as old as Tiru. Ten years later Sagar's age will be ten years more than Tiru's age find their present ages.

28. Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

29. In a $\triangle ABC$, XY is parallel to BC and it divides $\triangle ABC$ into two parts of equal area. Prove that $\dfrac{BX}{AB} = \dfrac{\sqrt{2}-1}{\sqrt{2}}$.

30. If tanθ+sinθ=m and tanθ-sinθ=n, then prove that $m^2-n^2=4\sqrt{mn}$

31. Without using trigonometric table, evaluate:
$8\sqrt{3}\ \text{cosec}^2 30^0.\sin 60^0.\cos 60^0.\cos^2 45^0.\sin 45^0.\tan 30^0.\text{cosec}^3 45^0.$

32. Prove that: $\sec^2\theta - \dfrac{\sin^2\theta - 2\sin^4\theta}{2\cos^4\theta - \cos^2\theta} = 1$

33. From the following frequency distribution prepare the "less than" ogive.

Weights(in kg)	No. of students
0 - 10	2
10 - 20	3
20 - 30	7
30 - 40	11
40 - 50	15
50 - 60	7
60 - 70	2
70 - 80	3

Obtain median from graph.

34. A health officer took an initiative of organizing a medical camp in a remote village. The medical checkup of 35 students of the age group of 10 years and their weights were recorded as follows:

Weight (in kg)	38 - 40	40 - 42	42 - 44	44 - 46	46 - 48	48 - 50	50 - 52
No. of students	3	2	4	5	14	4	3

1. Find the mean weight of students using Step deviation method.
2. Which value of health Officer was depicted in this situation? What health disorder does the above finding depict?