SFS

6HT8ER9

SUMMATIVE ASSESSMENT – I, 2014
MATHEMATICS
Class – IX

Time Allowed: 3 hours **Maximum Marks: 90**

General Instructions:

1. All questions are **compulsory.**
2. The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION-A

Question numbers **1** to **4** carry one mark each

1. Find the product of $20\sqrt{5}$ and $\frac{1}{4\sqrt{75}}$. 1

2. Find a zero of the polynomial $x^3 + 3x^2 - 3x - 1$. 1

3. If the angles of a triangle are in the ratio 2 : 3 : 5, then what type of triangle will it be? 1

4. Name the quadrant/quadrants in which the ordinate of a point is negative. 1

SECTION-B

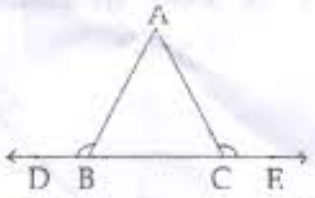
Question numbers **5** to **10** carry two marks each.

5. Simplify : $\frac{6 - 4\sqrt{3}}{6 + 4\sqrt{3}}$ by rationalising the denominator. 2

6. If $y = 2$ and $y = 0$ are the zeroes of the polynomial $f(y) = 2y^3 - 5y^2 + ay + b$, find the values of a and b. 2

7. In figure, if AC = BD, then prove that AB = CD. 2

8. In the figure, if $\angle ABD = \angle ACE$, then prove that AB = AC. 2



9. In the figure, ABCD is a rectangle of dimensions 4 cm and 6 cm. E and F are mid – points of AB and BC respectively. Find the area of the shaded portion. 2

10. Given a point X (0, 6), plot two points Y and Z on the graph paper so that XYZ is an isosceles triangle. Write the coordinates of the points Y and Z also. 2

SECTION-C

Question numbers **11** to **20** carry three marks each.

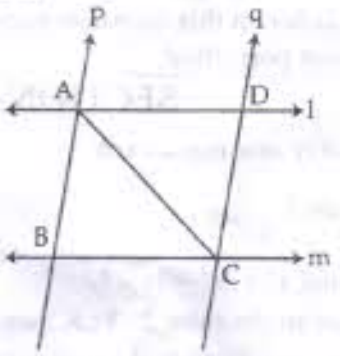
11 Express $0.\overline{235}$ in the $\frac{p}{q}$ form, where p and q are integers and $q \neq 0$. 3

12 Find the values of a and b if $\frac{5+\sqrt{6}}{5-\sqrt{6}} = a + b\sqrt{6}$ 3

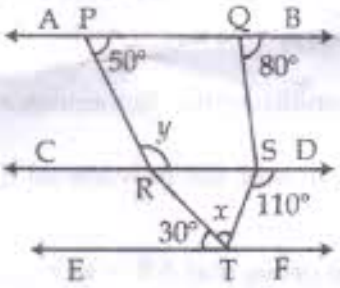
13 Show that $(x-1)$, $(x+3)$ and $(x-5)$ are factors of $x^3 - 3x^2 - 13x + 15$. 3

14 Factorise : $2x^3 + 3x^2 - 1$ 3

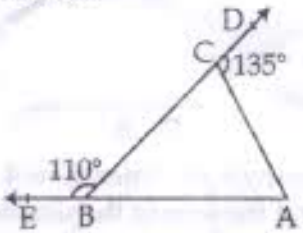
15 l and m are two parallel lines, intersected by another pair of parallel lines p and q as shown in the figure. Show that $\Delta ABC \cong \Delta CDA$. 3



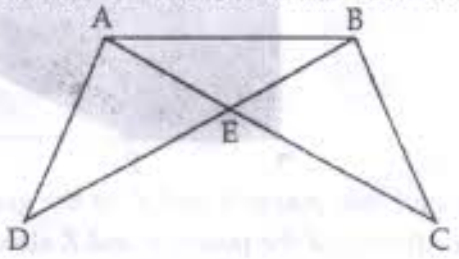
16 In given figure, if AB||CD||EF, find the value of $(y-x) : (y+x)$. 3



17 In figure, sides AB and BC of ΔABC are produced to point E and D respectively. If $\angle EBC = 110°$ and $\angle ACD = 135°$, find $\angle BAC$. 3



18. In given figure, $\angle EAB = \angle EBA$ and $AC = BD$. Prove that $AD = BC$. 3



19 A park is in the shape of a quadrilateral ABCD in which AB = 9 m, BC = 12 m, CD = 5 m, AD = 8 m and $\angle C = 90°$. Find the area of the park. 3

20 Plot the points $(-3, -4)$, $(-5, 0)$ and $\left(\frac{-3}{2}, \frac{1}{2}\right)$. Also, write the quadrant or axes in which these points lie. 3

SECTION-D

Question numbers **21** to **31** carry four marks each.

21 Simplify : $\left(\frac{81}{16}\right)^{-3/4} \times \left[\left(\frac{25}{9}\right)^{-3/2} \div \left(\frac{5}{2}\right)^{-3}\right]$ 4

22 If $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, then show that $x^2 + xy + y^2 = 99$. 4

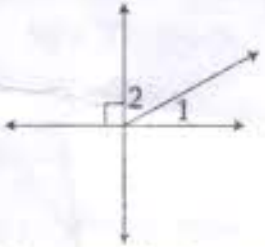
23 Prove that $(x+y)^3 - (x-y)^3 - 6y(x^2 - y^2) = 8y^3$. 4

24 Factorise : $x^3 + 13x^2 + 32x + 20$ 4

29 If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $x-1$ and $x+1$, the remainders are 5 and 19 respectively. Determine the remainder when $f(x)$ is divided by $(x-2)$. 4

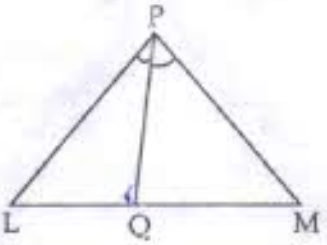
26 Factorise : $3u^3 - 4u^2 - 12u + 16$ 4

27 In the figure shown $\angle 1 = (4x+12)°$ and $\angle 2 = (6x+8)°$. Find angle $1\angle 1$ and $\angle 2$. 4



On the intersection of roads Authorities are placing a street light to avoid accidents in the night. By doing so what value is shown by them ?

28 In the given figure, PQ is the bisector of $\angle P$. 4
Show that : (i) PL>LQ (ii) PM>QM



29 If two lines intersect each other, then prove that the vertically opposite angles are equal. 4

30 In ΔABC, AD is the bisector of $\angle A$ and D is the mid point of BC. Prove that ΔABC is an isosceles triangle. 4

31 E and F are respectively the mid-points of equal sides AB and AC of ΔABC. Show that BF = CE. 4