AMBIENCE PUBLIC SCHOOL

LMYXVJK

SUMMATIVE ASSESSMENT – I, 2016-17
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 value of $\left[(16)^{\frac{1}{2}}\right]^{\frac{1}{2}}$. 1

2 Factorise : $6-x-x^2$. 1

3 Is Δ ABC possible, if $\angle A = 50°$, $\angle B = 130°$ and $\angle C = 40°$? 1

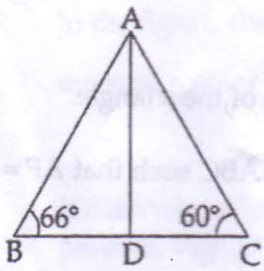
4 The area of an equilateral triangle is $64\sqrt{3}$ cm^2. Find its side. 1

SECTION-B

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

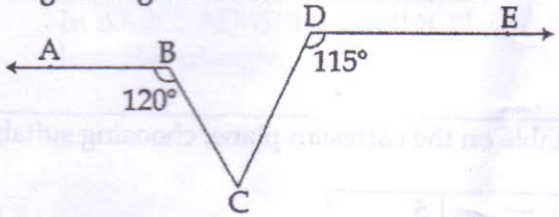
5 Express -0.00875 in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$. 2

6 Find the value of *k*, if $x-3$ is a factor of $p(x) = x^3 - 5x^2 + 3kx + 9$ 2

7 

In the given figure, ∠ ABD = 66^0 and ∠ACB = 60^0. If bisector of ∠A meets BC at D, then find ∠ADB. 2

8 In given figure AB || DE. Find ∠BCD. 2



9 Which of the points A(2, 2), B(2, 0), C(0, 2), D(0, 0), E(−2, 0), F(0, −2), G(4, 0) and H(0, 7) lie on the
(i) *x*-axis ? (ii) *y*-axis ? 2

10 Two sides of a triangle are 18 cm and 10 cm. If perimeter is 42 cm, find its area. 2

SECTION-C

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

11 Represent $\sqrt{4.2}$ on the number line. 3

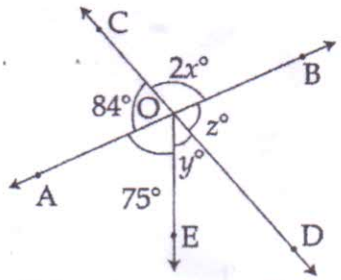
12 If $a=1+\sqrt{7}$, find the value of $\frac{-6}{a}$ 3

13 If $\left(x-\frac{1}{x}\right)=3$, find $x^2+\frac{1}{x^2}$ 3

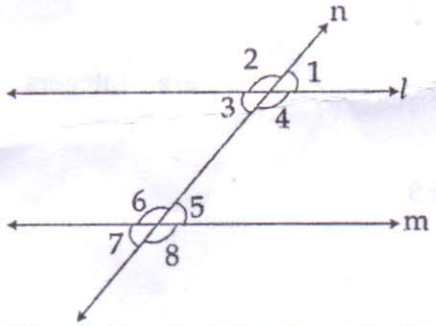
14 If $f(x)=5x^2-4x+5$, find $f(1)+f(-1)+f(0)$. 3

15 3

In the given figure, lines AB and CD intersect each other at O. Find the values of x, y and z.

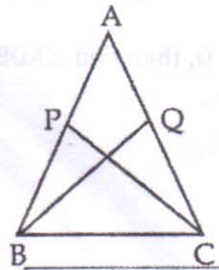


16 In the given figure, $l \| m$ and transversal n intersects l and m. If $\angle 4 : \angle 5 = 11 : 7$, find all the angles. 3



17 The angles of a triangle are in the ratio 2 : 4 : 3. Find the largest angle of the triangle. 3

18 In the figure, P and Q are two points on equal sides AB and AC of ΔABC such that $AP = AQ$. Prove that $CP = BQ$. 3



19 Plot the points (x, y) given in the following table on the cartesian plane, choosing suitable units of distances on the axes : 3

x	3.5	1.5	4	−2	−6	5
y	0	−3.5	5	−7	7	−1

3

20 Find area of an equilateral triangle having a side of 20 m length. Also, find its altitude.

SECTION-D

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

21 If $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find the value of $a+b$ by rationalizing the denominator. 4

22 Find the value of : 4

$$\frac{2}{(216)^{-2/3}} - \frac{4}{(243)^{-\frac{1}{5}}} + \frac{1}{(256)^{-3/4}}$$

23 Verify if 1 and -3 are zeroes of the polynomial $3x^3+5x^2-11x+3$. 4
If yes, then factorise the polynomial.

24 Divide the polynomial $3x^4+4x^3+3x+1$ by $x-1$ and find quotient and remainder. 4

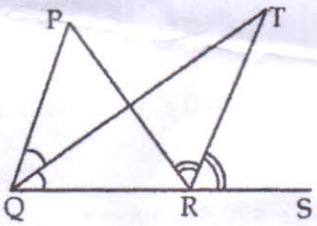
25 Factorise : 4

1. $4x^2+9y^2+16z^2+12xy-24yz-16xz$
2. $8a^3-b^3-12a^2b+6ab^2$

26 If $a+b+c=0$, then prove that $a^3+b^3+c^3 = 3abc$ 4

27 Teacher held two sticks AB and CD of equal length in her hands and marked their mid-points M and N respectively. She then asked the students whether AM is equal to ND or not. Arpita answered yes. Is Arpita correct ? State axiom of Euclid's that support her answer. Which characteristics of Arpita you want to inculcate in your nature? 4

28 4



In the figure, the side QR of ΔPQR is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at a point T, then prove that $\angle QTR = \frac{1}{2}\angle QPR$.

29 If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel. 4

30 Prove that the sum of the angles of a triangle is 180^0 4

31 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

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