Vaidehi Bhatt DPS
IX-D
16-9-15

6AFB3MJ

SUMMATIVE ASSESSMENT – I, 2015-16
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

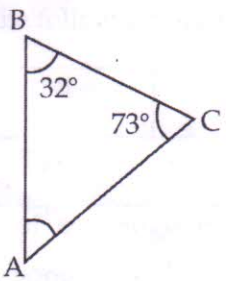
Question numbers **1** to **4** carry one mark each.

1 Identify an irrational number among the following numbers : 1

$(1+\sqrt{3})-(\sqrt{3}-1), 2+5\sqrt{5}-\sqrt{125}; \frac{\pi}{2\pi}, \frac{\sqrt{2}}{2}+\frac{1}{\sqrt{2}}$

2 Factorise : $20x^2-9x+1$. 1

3 Find the measure of $\angle A$ from the given figure : 1



4 What do you mean by ordinate of a point? 1

SECTION-B

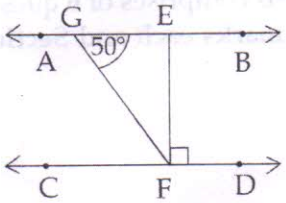
Question numbers **5** to **10** carry two marks each.

5 Simplify : $\frac{5+\sqrt{2}}{5-\sqrt{2}}$

6 Find the remainder when $x^3-4x^2+12x+7$ is divided by $x+\frac{1}{2}$.

7 In a triangle PQR, X and Y are the points on PQ and QR respectively. If PQ = QR and QX = QY, show that PX = RY.

8 In the figure, AB||CD, EF ⊥ CD and ∠EGF = 50°. Find ∠EFG and ∠GFD.



9 Find distances of following points from the y −axis :

(4, 5), (5, −4), (−4, −5) and (−5, 4)

10 There is a slide in a park. One of its side walls has been painted in some colour with a message "Keep the park clean and green". If sides of the wall are 14 m, 10 m and 6 m, find the area painted in colour.

SECTION-C

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

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

12 Simplify :

$$\left[5\left(8^{1/3}+27^{1/3}\right)^3\right]^{1/4}$$

13 Find the product of $\left(a-\frac{1}{a}\right)\left(a+\frac{1}{a}\right)\left(a^2+\frac{1}{a^2}\right)\left(a^4+\frac{1}{a^4}\right)$ using a suitable identity :

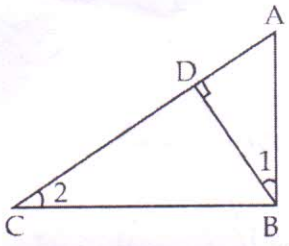
14 Show that $x-1$ is a factor of the polynomial $x^3-13x^2+32x-20$. Hence Factorise the polynomial.

9th Maths

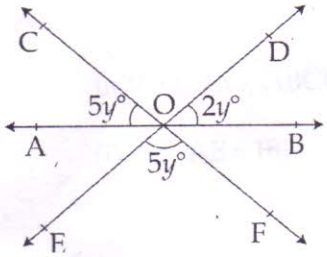
15 In a triangle ABC, X and Y are the points on AB and BC respectively. If $BX = \frac{1}{2}AB$ and $BY = \frac{1}{2}BC$ and $AB = BC$. Show that $BX = BY$. 3

16 WXYZ is a quadrilateral whose diagonals intersect each other at the point O such that $OW = OX = OZ$. If $\angle OWX = 50°$, then find the measure of $\angle OZW$. 3

17 In the figure ABC is a right triangle, right angled at B. BD is drawn perpendicular to AC. Show that $\angle 1 = \angle 2$. 3



18 In the figure, lines AB, CF and DE meet at O. Determine the value of y. 3



19 Plot the following ordered pairs (x, y) of numbers as points in the cartesian plane : 3

x	3	−3	3.5	0	−2.5	5
y	5	6	0	−1.5	−3.5	1

20 Sides of a triangular field are 25 m, 45 m and 50 m. Find its area and the altitude corresponding to the longest side. (Use $\sqrt{14} = 3.73$) 3

SECTION-D

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

9th Maths

21 Prove that : $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$. 4

22 Give an example of two irrational numbers whose : 4

(i) difference is an irrational number

(ii) sum is an irrational number

(iii) product is an irrational number

(iv) division is an irational number

Justify also.

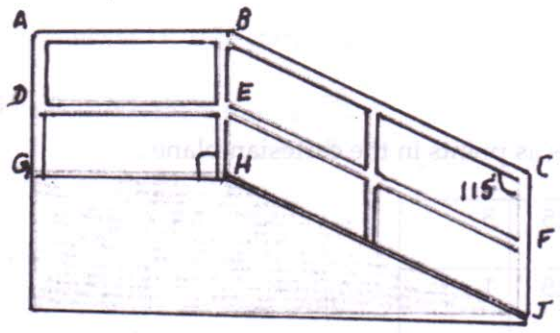
23 Factorise : $y^3 - 2y^2 - 29y - 42$ using factor theorem. 4

24 Simplify : $\frac{x^3 - 4 - x + 4x^2}{x^2 + 3x - 4}$ 4

25 Prove that $(x+y)^3 + (y+z)^3 + (z+x)^3 - 3(x+y)(y+z)(z+x)$ $= 2(x^3 + y^3 + z^3 - 3xyz)$. 4

26 Find the value of $(106)^3 - (94)^3$, using a suitable identity. 4

27 4

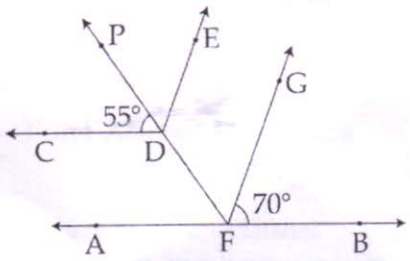


In the given figure ADG represents a College gate followed by a ramp HJ instead of stairs to make it easy for physically challenged students to climb. HJ is equal to mid support EF and EF is equal to BC. What is the relation between BC and HJ ? State the Euclid Axiom behind this fact. Which value college is exhibiting by placing ramps instead of stairs ? Mention one more Euclid Axiom.

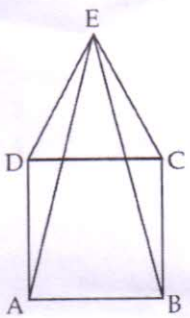
28 It is known that if $a+b = 10$ then $a+b-c = 10-c$. Write the Euclid's axiom that best illustrates this statement. Also give two more axioms other than the axiom used in the above situation..0 4

9th Maths

29 In given figure AB || CD and DE || FG. Determine ∠PDE, ∠AFD and ∠DFG. 4



30 4



In the figure, ABCD is a square and CDE is an equilateral triangle. Prove that :

(i) AE = BE (ii) ∠EBC = 15°

31 If the bisectors of angles B and C of a triangle ABC meet at O, then prove that 4
$\angle BOC = 90° + \frac{1}{2}\angle A$.

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