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BUBYLS6

SUMMATIVE ASSESSMENT – I, 2015-16
MATHEMATICS
Class – IX
Set - I

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 $\left(\frac{64}{25}\right)^{\frac{-3}{2}}$. 1

2 Find $f(\sqrt{2})$, if $f(x) = x^2 + \sqrt{2}x + 1$. 1

3 Two supplementary angles are in the ratio 2 : 7. Find the measures of angles. 1

4 If $x \neq y$, then $(x, y) = (y, x)$ or not ? 1

SECTION-B

Question numbers 5 to 10 carry two marks each.

5 Simplify : $\sqrt[4]{16} - 6\sqrt[3]{343} + 18 \times \sqrt[5]{243} - \sqrt{196}$ 2

6 Factorise : 2

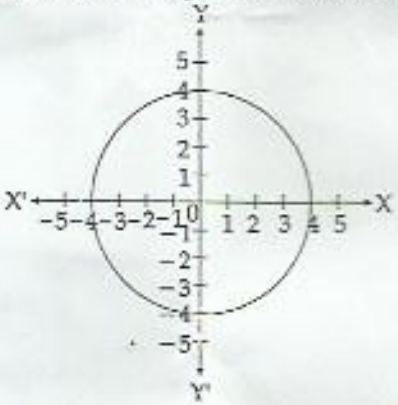
$4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$.

Also mention the identity used.

7 In the figure if AB = CD, prove that AC = BD. State Euclid axiom, which is applicable here. 2

8 In Δ ABC, AD is the bisector of ∠BAC. Prove that AB>BD. 2

9 In the given figure of a circle, write the coordinates of the points where circle meets the axes. 2



10 Find the area of an isosceles triangle whose one side is 4 m greater than its equal side and perimeter is 40 m.

SECTION-C

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

11 Find three irrational numbers between $\frac{5}{7}$ and $\frac{9}{11}$. 3

12 Show that $\sqrt{x^{-1}y^{-1}} \cdot \sqrt{xy} - \frac{1}{\sqrt{x^{-1}y^{-1}}} \cdot \frac{1}{\sqrt{xy}} = 0$ where x and y are positive real numbers. 3

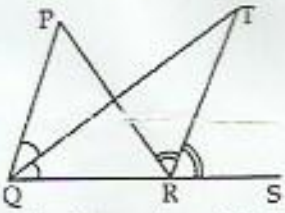
13 Find the product of $\left(a - \frac{1}{a}\right)\left(a + \frac{1}{a}\right)\left(a^2 + \frac{1}{a^2}\right)\left(a^4 + \frac{1}{a^4}\right)$ using a suitable identity : 3

14 Factorise : $(x-2y)^3 + (2y-3z)^3 + (3z-x)^3$ 3

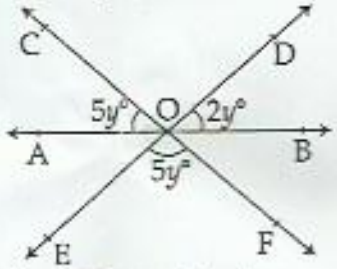
15 In a Triangle ABC, X and Y are the points on AB and BC such that BX = BY and AB = BC. Show that AX = CY. State the Euclid's Axiom Used. 3

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, 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 $\angle QTR = \frac{1}{2}\angle QPR$. 3



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



19 In which quadrant or on which axis do the points $(-2, -4)$, $(2, 4)$, $(0, -2)$ and $(4, -6)$ lie ? Verify your answer by locating them on the cartesian plane. 3

20 Find the area of a trapezium in which parallel sides are of lengths 5 cm and 11 cm, whereas non-parallel sides are of lengths 4 cm and 6 cm. 3

SECTION-D

Question numbers 21 to 31 carry four marks each.

21 Give two rational numbers whose : 4

(i) difference is a rational number
(ii) sum is a rational number
(iii) product is a rational number
(iv) division is a rational number

Justify also.

22 Rationalise the denominator of $\frac{1}{\sqrt{7} + \sqrt{6} - \sqrt{13}}$. 4

Prove that : 4

$(x+y)^3+(y+z)^3+(z+x)^3-3(x+y)(y+z)(z+x)=2(x^3+y^3+z^3-3xyz)$

If the polynomials ax^3+3x^2-13 and $2x^3-5x+a$ are divided by $(x-2)$, the remainder is same. Find the value of a. 4

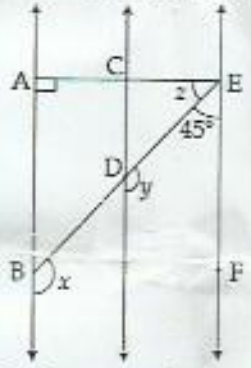
25 Verify if $\frac{1}{2}$ and $-\frac{3}{2}$ are zeroes of the polynomial $8x^3-4x^2-18x+9$. If yes, then factorise the polynomial. 4

26 Without actually calculating the cubes, find the value of $2(0.3)^3+(0.4)^3+(0.5)^3+(-0.7)^3+(-0.8)^3$. Also write the identity used. 4

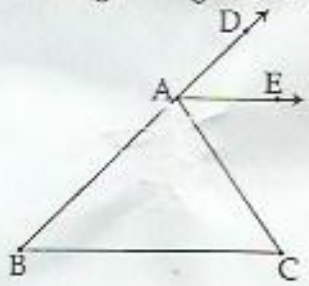
27 There is a triangular park PQR whose angles P,Q and R are in ratio 2 : 4 : 3 respectively. Three friends Rashmi, Sita and Geeta go daily on morning walk and walk along these three side PQ, QR and PR respectively. Who walks maximum distance among these three ? Who walks least ? Why morning walk is necessary for us ? 4

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. 4

29 In given figure $AB \parallel CD$, $CD \parallel EF$ and $EA \perp AB$. If $\angle BEF=45°$ find the values of x, y and z. 4



30 In the given figure, $\angle B=\angle C$ and AE bisects $\angle CAD$. Prove that AE is parallel to side BC. 4



31 The angles of a triangle are $(x-40)°$, $(x-20)°$ and $\left(\frac{x}{2}-10\right)°$. Find the value of x and then the angles of the triangle. 4