CBSE Sample Paper-02 (unsolved)
SUMMATIVE ASSESSMENT -I
MATHEMATICS
Class - IX

Time allowed: 3 hours Maximum Marks: 90

General Instructions:

a) All questions are compulsory.
b) The question paper comprises of 31 questions divided into four sections A, B, C and D. You are to attempt all the four sections.
c) Questions 1 to 4 in section A are one mark questions. These are MCQs. Choose the correct option.
d) Questions 5 to 10 in section B are two marks questions.
e) Questions 11 to 20 in section C are three marks questions.
f) Questions 21 to 31 in section D are four marks questions.
g) There is no overall choice in the question paper. Use of calculators is not permitted.

Section A

Q1. If $x=y-y^2-1$, then the value of y in terms of x is

a) $\frac{x^2-1}{2x}$

b) $\frac{x^2-x+1}{2x}$

c) $\frac{x^2-x}{2x}$

d) $\frac{x^2+1}{2x}$

Q2. Zero of a zero polynomial is

a) 0

b) Not defined

c) Any real number

d) Any integer

Q3. The number of dimensions, a solid has:

a) 7

b) 5

c) 3

d) 1

Q4. If one of the angles of a triangle is $130°$, then the angle between the bisectors of the other two angles can be

a) $50°$

b) $65°$

c) $145°$

d) $155°$

SECTION- B

Q5. Is zero a rational number ? Can you write it in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

Q6. Find $p(0)$, $p(1)$ for the polynomial $p(t) = 2 + t + 2t^2 - t^3$

Q7. Prove or disprove: Euclidean geometry is valid only for curved surfaces.

Q8. In the following figure, $AB \parallel CD$ and $\angle F = 30°$, find $\angle FCD$.

Q9. In the following figure, prove that $m + n = x$.

Q10. If , $\Delta PQR \cong \Delta ABC$, then is it true to say that $PR = AC$? Give reason for your answer.

SECTION - C

Q11. Examine , whether $(\sqrt{3}+2)^2$ is an irrational number or a rational number.

Q12. Represent $\sqrt{3}$ on a number line. Write steps of drawing number line also.

Q13. Without actual division, prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$.

Q14. Find the value of 'a', if $(x+1)$ is a factor of polynomial $ax^3 - 9x^2 + x + 6a$.

Q15. In the following figure, R is the midpoint of the segment AB. P and Q are mid points of the segments AR and BR respectively. Prove that $AP = BQ = \frac{1}{4}AB$.

Q16. If two parallel lines are intersected by a transversal prove that the bisectors of the two pairs of interior angles enclose a rectangle.

Q17. In the following figure, if $AB \parallel CD$, $CD \parallel EF$ and $y : z = 3 : 7$, find x.

Q18. In a ΔPQR, if $PQ = QR$ and L, M and N are the mid-points of the sides PQ, QR and RP respectively. Prove that $LN = MN$.

Q19. Points $A(5,3)$, $B(-2,3)$ and $D(5,-4)$ are three vertices of a square ABCD. Plot these points on a graph paper and hence find the coordinates of the vertex C.

Q20. Find the area of triangle, two sides are $18cm$ and $10cm$ and the perimeter is $42cm$.

SECTION - D

Q21. If $x = \frac{\sqrt{2p+3q} + \sqrt{2p-3q}}{\sqrt{2p+3q} - \sqrt{2p-3q}}$, then find the value of $3x^2q^2 - 4pqx + 3q^2$

Q22. A) Taking $\sqrt{3} = 1.732(approx.)$ and $\sqrt{5} = 2.236(approx.)$, evaluate $\frac{1}{4\sqrt{3} - 3\sqrt{5}}$ correct to three places of decimals.

B) Prove that: $\{3^{-2} * 2^1 * 25^{-5}\} \div \{32^{-2} * 125^{-5}\} = 2$

Q23. If a, b, c are all non-zero and $a + b + c = 0$, prove that $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = 3$

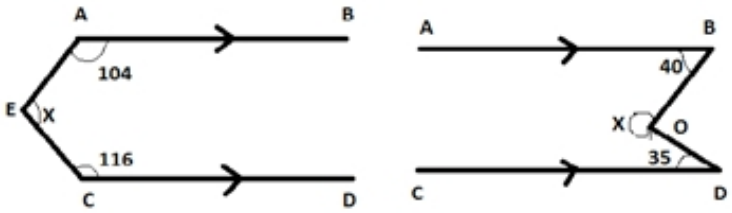
Q24. Prove that : $(a+b+c)^3 - a^3 - b^3 - c^3 = 3(a+b)(b+c)(c+a)$

Q25. What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$ so that the result is exactly divisible by $2x^2 + x - 1$?

Q26. Factorise : $x^3 - 3x^2 - 9x - 5$

Q27. Prove that the bisectors of two adjacent supplementary angles include a right angle.

Q28. In the following figures, $AB \parallel CD$. Find the value of x.



Q29. In a triangle, prove that the greater angle has the longer side opposite to it.

Q30. If two isosceles triangles have a common base, prove that the line joining their vertices bisects them at right angles.

Q31. ΔABC is an equilateral triangle where each side is of length x units. Find the area of the ΔABC, using Heron's formula. Hence find the area of equilateral ΔABC if its perimeter is $120m$.