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. Rationalize the denominator of $\frac{1}{\sqrt{7}}$

Q2. Check whether x=-1 and x=2 are the Zeros of the polynomial p(x) = (x+1) (x-2)

Q3. The number of dimensions, a solid has:

Q4. Find the area of a triangle whose sides are 13cm, 14cm and 15cm.

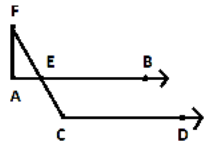
SECTION- B

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

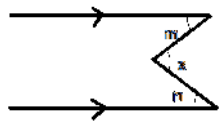
Q6. Find $p(0), p(1)$ for the polynomial $p(t) = 2 + t + 2t^2 - t^3$.

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

Q8. In the following figure, $AB \| CD$ 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 $\left(\sqrt{3}+2\right)^2$ is an irrational number or a rational number.

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

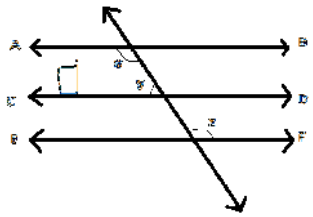
Q13. Without actual division, prove that $2x^4-6x^3+3x^2+3x-2$ is exactly divisible by x^2-3x+2.

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: $\left[8^{\frac{-2}{3}} * 2^{\frac{1}{2}} * 25^{\frac{-5}{4}}\right] \div \left[32^{\frac{-2}{5}} * 125^{\frac{-5}{6}}\right] = \sqrt{2}$

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

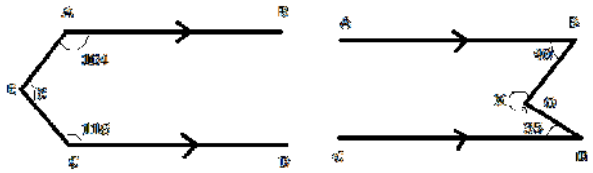
Q24. Prove that : $(a+b+c)^3 - a^3 - b^3 - c^3 = 3(a+b)(b+c)(c+a)$

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 $120m$.