CBSE Sample Paper-05 (unsolved)
SUMMATIVE ASSESSMENT –I
MATHEMATICS
Class – IX

Time allowed: 3 hours Maximum Marks: 90

General Instructions:

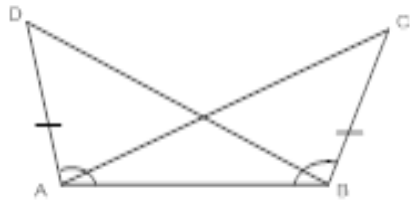
a) All questions are compulsory.
b) The question paper comprises of 31 questions divided into four sections A, B, C and D. You are to attempt all the four sections.
c) Questions 1 to 4 in section A are one mark questions. These are MCQs. Choose the correct option.
d) Questions 5 to 10 in section B are 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. Find two rational numbers between $\frac{3}{5} and \frac{4}{5}$

Q2. When polynomial $x^3 + 3x^2 + 3x + 1$ is divided by x + 1, the remainder is

Q3. In fig , if AD =BC and $\angle BAD = \angle ABC$, then $\angle ACB$ is equal to



Q4. The point (0, -5) lies on

Q5. Are the square roots of all positive integers irrational? If no, give two examples.

Q6. Show that $(x-3)$ is a factor of the polynomial $f(x) = x^3 + x^2 - 17x + 15$.

Q7. On which axes do the following points lie?

a) $(7,0)$

b) $(0,-3)$

c) $(0,6)$

d) $(-5,0)$

Q8. If lines AB, AC, AD and AE are parallel to line l, show that the points A, B, C, D, E are collinear.

Q9. Prove that the bisectors of a pair of vertically opposite angles are in the same straight line.

Q10. Of the three angles of a triangle, one is twice the smallest and another one is thrice the smallest. Find the angles.

Q11. Prove that $\sqrt{4}$ is not a rational number.

Q12. Simplify: $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}+\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$

Q13. Check whether the polynomial $p(x)=4x^3+4x^2-x-1$ is a multiple of $(2x+1)$.

Q14. Factorize: $(2x+3y)^3-(2x-3y)^3$

Q15. Prove or disprove: " Two distinct lines always intersect at a point ".

Q16. If two straight lines are perpendicular to the same line, prove that they are parallel to each other.

Q17. If two straight lines intersect each other in such a way that one of the angles formed measures $90°$, show that each of the remaining angles measures $90°$.

Q18. Prove that the angle between the internal bisector of one base angle and the external bisector of the other is equal to one half of the vertical angle.

Q19. Draw the graph of $y=2x$.

Q20. Using heron's formula, find the area of an equilateral triangle of side a units.

Q21. Show that $\frac{1}{3-\sqrt{8}}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-2}=5$.

Q22. If $\sqrt{2}=1.414, \sqrt{3}=1.732, \sqrt{5}=2.236$ and $\sqrt{6}=2.449$, find the value of $\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}-1}{\sqrt{3}+1}$

Q23. Prove that: $\frac{a^{-1}}{a^{-1}+b^{-1}}+\frac{a^{-1}}{a^{-1}-b^{-1}}=\frac{2b^2}{b^2-a^2}$

Q24. Factorise: x^3-13x^2-9x-5

Q25. If the polynomials $(2x^3+ax^2+3x-5)$ and (x^3+x^2-2x+a) leave the same remainder when divided by $(x-2)$, find the value of a. also, find the remainder in each case.

Q26. Without actual division , show that $x^3-3x^2-13x+15$ is exactly divisible by x^2+2x-3.

Q27. If the arms of one angle are respectively parallel to the arms of another angle, show that the two angles are either equal or supplementary.

Q28. In a ΔABC, the sides AB and AC are produced to P and Q respectively. Thebisectors of $\angle PBC$ and $\angle QCB$ intersect at a point O. Prove that $\angle BOC = 90° - \frac{1}{2}\angle A$.

Q29. If two isosceles triangles have a common base, prove that the line segment joining their vertices bisects the common base at right angles.

Q30. If O is a point within ΔABC, show that :

a) $AB + AC > OB + OC$

b) $AB + BC + CA > OA + OB + OC$

c) $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$

Q31. A field is in the shape of a trapezium whose parallel sides are $50m$ and $15m$. The non- parallel sides are $20m$ and $25m$. Find the area of the trapezium.