GOLDEN GATE TO IIT

A GROUP TUITION PROGRAMME FOR THE JEE

ADMISSION TEST – SAMPLE PAPER

TIME : 2 HOURS

Instructions : 1. Check that this question paper contains 10 questions.
2. Fill in all your details in the space provided .
3. DO NOT detach the question paper. It is to be submitted along with the answerbook.
4. Attempt all questions in any sequence.
5. Write all the answers in as much details as you can.
6. Wrong/incomplete answer does not necessarily mean zero credit.
7. There is NO NEGATIVE credit.

1. Find natural numbers x and y such that $\frac{xy+1}{y-x}=3$
2. A, B, C are three collinear points with A-B-C. Write **four** implications of this statement.
3. If $a^x = b^y = ab$, then prove that $x+y=xy$
4. In ΔABC, $l(AB)=c$, $l(BC)=a$, $l(AC)=b$. Prove that the area of the triangle is given by $\frac{(a+b+c)}{2}r$ where r is the radius of the circle touching the sides of the triangle.
5. Prove that x can not be rational if $2^x = 7$.
6. In a trapezium ABCD, AB and DC are parallel sides and AC, BD intersect at O. If $DC = 2AB$, prove that O is a point of trisection of both the diagonals.
7. Prove that $\sqrt{2}\left(\sqrt{2+\sqrt{3}}-\sqrt{2-\sqrt{3}}\right)$ is an even number.
8. Area of the square ABCD is 1. Diagonal AC is extended to the point E such that C is the midpoint of AE. Find the length of seg BE.
9. Find the values of x which satisfy $3^{2x}-3^{x+1}-3^{x-1}+1=0$
10. Let ABCD be any quadrilateral. Let P, Q, R and S be the midpoints of the sides AB, BC, CD and DA respectively. Prove that quadrilateral PQRS is a parallelogram.

Joint Admission Test Ends