CBSE Sample Paper -04
SUMMATIVE ASSESSMENT –I
Class – XMathematics

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.
   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

1.   From the given graph, find the number of zeroes of the corresponding polynomial.

2.   Prove that tan1°tan2°tan3°……tan89° = 1.
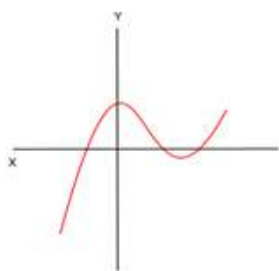
3.   Find the value of x, if the mode of the following data is 25.

      15, 20, 25, 18, 14, 15, 25, 15, 18, 16, 20, 25, 20, x, 18

4.   Express sec67°+cosec58° in terms of trigonometric ratios of angles between 0° and 45°.

SECTION - B

5.   In the given figure, AE is the bisector of the exterior ∠CAD meeting BC produced in E. If AB = 10 cm, AC = 6 cm and BC = 12 cm, find CE.
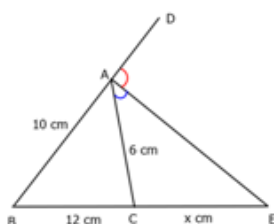
6. If $p(x) = 2x^2 - 3x + 4$, find $p(3)$ and $p(-1)$.

7. The sum of two numbers is 100 and the difference between their squares is 256000. Find the numbers.

8. Taking $A = 60°$ and $B = 30°$, verify that

   $\sin(A - B) = \sin A \cos B - \cos A \sin B$

9. The hypotenuse of a right triangle is 6 m more than the twice of the shortest side. If the third side is 2 m less than the hypotenuse, find the sides of the triangle.

10. The following data gives the distribution of total household expenditure (in rupees) of manual workers in a city:

| Expenditure (Rs)	Frequency	Expenditure (Rs)	Frequency
1000-1500	24	3000-3500	30
1500-2000	40	3500-4000	22
2000-2500	33	4000-4500	16
2500-3000	28	4500-5000	7

Find the average expenditure which is being done by the maximum number of manual workers.

SECTION – C

11. The sum of two numbers is 16 and the sum of their reciprocals is $\dfrac{1}{3}$. Find the numbers.

12. An equilateral triangle is inscribed in a circle of radius 6 cm. Find its side.
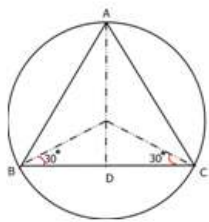
13. If $\sin\theta = \dfrac{a}{\sqrt{a^2 + b^2}}$, $0 < \theta < 90°$, find the values of $\cos\theta$ and $\tan\theta$.

14. A point O in the interior of a rectangle ABCD is joined with each of the vertices A, B, C and D. Prove that $OB^2 + OD^2 = OC^2 + OA^2$
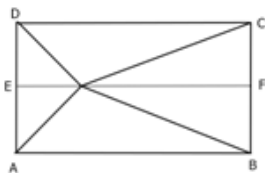
15. If 3 times the larger of the two numbers is divided by the smaller one, we get 4 as quotient and 3 as the remainder. Also, if 7 times the smaller number is divided by the larger one, we get 5 as quotient and 1 as the remainder. Find the numbers.

16. Draw the graph of the polynomial $f(x) = -4x^2 + 4x - 1$. Also, find the vertex of this parabola.

17. Prove that one of every three consecutive positive integers is divisible by 3.

18. If $\dfrac{\cos\alpha}{\cos\beta} = m$ and $\dfrac{\cos\alpha}{\sin\beta} = n$, show that $\left(m^2 + n^2\right)\cos^2\beta = n^2$.

19. If the median of the following frequency distribution is 46, find the missing frequencies.
Variable:

Less than20	Less than20	Less than20	Less than20	Less than20	Less than20	Less than20	Less than20	Less than20
0	4	16	30	46	66	82	92	100

20. Prove that if three or more parallel lines are intersected by two transversals, prove that the intercepts made by them on the transversals are proportional.

SECTION – D

21. If p is a prime number, then prove that $\sqrt{p}$ is irrational.

22. The mean of the following frequency table is 50. But the frequencies f_1 and f_2 in class 20-40 and 60-80 are missing. Find the missing frequencies.

Class	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	f_1	32	f_2	19	120

23. A boat covers 32 km upstream and 36 km downstream in 7 hours. Also, it covers 40 km upstream and 48 downstream in 9 hours. Find the speed of the boat in still water and that of the stream.

24. Prove that the areas of two similar triangles are in the ratio of the squares of the corresponding angle bisector segments.

25. Rama went to a stationary stall and purchased 2 pencils and 3 erasers for Rs 9. Her friend Sonal saw the new variety of pencils and erasers with Rama and she also bought 4 pencils and 6 erasers of the same kind for Rs 18. Represent this situation algebraically and graphically.

26. Prove that in any triangle, the sum of the squares of any two sides is equal to twice the square of half of the third side together with twice the square of the median which bisects the third side.

27. In the given figure, AD = DB and ∠B is a right angle. Find $\sin^2\theta + \cos^2\theta$.
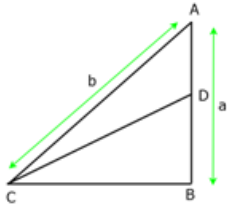
28. Prove $\dfrac{\cos A}{1-\tan A}+\dfrac{\sin A}{1-\cot A}=\cos A+\sin A$.

29. Compute the median from the following data:

Mid-value	115	125	135	145	155	165	175	185	195
Frequency	6	25	48	72	116	60	38	22	3

30. Verify that 3, –1 and $-\dfrac{1}{3}$ are the zeros of the cubic polynomial $p(x)=3x^3-5x^2-11x-3$ and

then verify the relationship between the zeros and its coefficients.

31. a. After every 6 months, price of petrol increases at the rate of Rs 4 per litre. Taking price of petrol in December 2010 as x and present price of petrol as y, form a linear equation showing the price of petrol in December 2014.

b. Due to continuous rise in the price of petrol, people are more interesting in CNG whose price is increasing at the rate of Rs 3 per litre in a year. Form a linear equation taking price of CNG in December 2010 as a and in December 2014 as b.

c. Which value is depicted by using CNG over petrol?

For more sample papers visit :

www.4ono.com