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Class – X Subject – Mathematics Summative Assessment-I

Time: 3Hours M.M.80

Section-A

Choose the correct answer and write in your answer sheet $10\times1=10$

Q.1 $(1+3\sqrt{2})(1-3\sqrt{2})$ *is*

a. Positive integer b. Negative Integer c. Irrational No. d. None

Q.2 Sum of an irrational number and a rational number is always:

a.an irrational b.a rational c.an integer d.a whole number

Q.3 Which one is not polynomial .

a. x^3-3x^2+x+1 b. $\sqrt{5}x^2+x+1$ c. $8x^{-2}+x+1$ d. All are polynomial

Q.4 Value of k for which the system $kx+2y=5$, $3x+y=1$ has unique solution.

a. $k=6$ b. $k=3$ c. $k\neq6$ d. both b & c

Q.5 If *If* $\tan^2\theta+\frac{1}{\tan^2\theta}=\sqrt{3}$ then value of $\tan^4\theta+\frac{1}{\tan^4\theta}$ is equal to

a. 3 b. 9 c. 2 d. none

Q.6 Trigonometric ratio whose value is can not greater than 1

a. tanA b. cosA c. sinA d. both (b) and (c)

Q.7 Ratio of areas of two similar triangles whose corresponding sides are 8 cm and 12cm is

a. $\frac{4}{9}$ b. $\frac{6}{9}$ c. $\frac{2}{3}$ d. $\frac{3}{2}$

Q.8 QA and PB are perpendiculars to AB .If AQ = 10 PB = 6 and AB=9 then PQ is

a. 12 b. 5.4 c. 15 d. none

Q.9 Remainder when $3x^3+16x^2+21x+20$ is divided by $x+4$

a. 10 c. -10 c. 0 d. none

Q.10 $\sec\theta\ (1-\sin\theta)(\sec\theta+\tan\theta)$ equals to

a. $\sec^2\theta+\tan^2\theta)$ b. 1 c. -1 d. none

Section-B

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Q.11 Consider the number 6^n ,Where n is a natural number.Check whether for any value 6^n ends with the digit zero.

Q.12 If α, β are zeroes of quadratic polynomial $kx^2 + 4x + 14$,find the value of k such that

$$(\alpha + \beta)^2 - 2\alpha\beta = 24$$

Q.13 Solve for x and y

$$\frac{x}{a} + \frac{y}{b} = 2, ax - by = a^2 - b^2$$

Q.14 If one diagonal of a trapezium divides the other diagional in ratio 1:2,Prove that one of the parallel side is double the other.

Q.15 If A,B and C are interior angle of triangle ABC,then show that $\sin\left(\frac{B+C}{2}\right) = \cos\frac{A}{2}$

Q.16 If $7\sin^2\theta + 3\sin^2\theta = 4, then$ show that $\tan\theta = \frac{1}{\sqrt{3}}$

Q.17 The following is the distribution of weight(in Kg.) of 40 persons.

Weight(in kg.)	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80
No.of persons	4	4	13	5	6	5	2	1

Construct a cumulative frequency distribution of less than type the above data.

Q.18 The weight of tea in 70 packets are shown in the following table:

Weight(in kg)	200-201	201-202	202-203	203-204	204-205	205-206
No.of persons	12	26	20	9	2	1

Section-C

Q.19 Find the H.C.F. of 65 and 117 and express it in the form of 65m+117n.

Q.20 Find the largest number that will divide 398,436 and 542 leaving remainder 7,11,15,respectively.

Q.21 On dividing $x^3 + x^2 + x - 2$ by a polynomial $g(x)$,the quotient and remainder were $x^2 + 2x + 1$ and $2x - 1$ respectively.Find $g(x)$.

Q.22 α, β are the zeros of the quadratic polynomial $x^2 - (k-1)x + 2(2k-1)$. Find the value of k if

$$\alpha + \beta = \frac{1}{2}\alpha\beta$$

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Q.23 Prove that area of equilateral triangle described on the side of a square is half the area of equilateral triangle described on its diagonal.

Q.24 Given $\Delta ABC, \angle A = 90^\circ$,and $AD \perp BC$,Prove that AD^2=BD.CD

Q.25 Evaluate:

$$\frac{\sec^2\theta - \cot^2(90-\theta)}{5(\sin^2 52^\circ + \sin^2 38^\circ)} - \frac{3.\cot^2 60^\circ.\cos ec^2 72^\circ.\cos^2 18^\circ}{\cos ec^2 54^\circ - \tan^2 36^\circ}$$

Q.26 Prove that:

$$\frac{\cos^3\theta + \sin^3\theta}{\cos\theta + \sin\theta} + \frac{\cos^3\theta - \sin^3\theta}{\cos\theta - \sin\theta} = 2.$$

Q.27 The mean of following distribution is 53. Find the value of p.

Class	0-20	20-40	40-60	60-80	80-100
Frequency	12	15	32	P	13

Q.28 Find the median of following distribution:

Class	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	5	6	15	10	5	4	2	2

Section-D

Q.29 Draw the graphs of the pair of linear equation $x - y + 2 = 0; 4x - y - 4 = 0$ .Calculate the area of the triangle formed by the lines so drawn and the $x-axis$.

Q.30 In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. Prove the converse of it

Using the above proved theorem. Δ ABC is isosceles triangle with AC=BC. if $AB^2=2AC^2$. Proved that ABC is a right angled triangle.

Q.31 If α, β are the zeroes of polynomial $2x^2 + 5x = k$ and $\alpha^2 + \beta^2 + \alpha\beta = \frac{21}{4}$,find the value of k .

Q.32 If $x = a\sin\theta$ and $y = b\tan\theta$ then Prove that $\frac{a^2}{x^2} - \frac{b^2}{y^2} = 1$.

OR Show that $\frac{\cot A + \cos ecA - 1}{\cot A - \cos ecA + 1} = \frac{1 + \cos A}{\sin A}$

Q.33 If $\sin A + \cos ecA = 3$, find the value of $\frac{\sin^4 A + 1}{\sin^2 A}$.

Q.34 Draw the cumulative frequency curve of more than and less than type for the following distribution:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	5	3	4	3	3	4	7	9	7	8