FULL SYLLABUS TEST
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Subject : MATHEMATICS
Class X (SA - 01)

Time Allowed: 180 Minutes **Max. Marks: 90**

SECTION – A

Q01. The decimal expansion of the rational expression $\frac{154787}{1250}$ will terminate after……...?

Q02. If the zeroes of $x^2+(a+1)x+b$ are 2 and –3, then values of a and b are……..

Q03. In ΔABC, PQ$||$BC, if AP = 1.5cm, PB = 3cm, AQ = 1.3cm then QC =…….

Q04. If $\cos 9\theta = \sin\theta$ and $9\theta < 90^\circ$, then the value of $\tan 5\theta$ is……..

Q05. If $\sin\theta - \cos\theta = 0$ then the value of $(\sin\theta + \cos\theta)$ is……..

Q06. Statement: $n^2 - 1$ is divisible by 8, if n is an even integer. True/ False?

Q07. The LCM and HCE of two positive numbers are l and h respectively. If one integer is a then, the other will be……

Q08. The of equations $x = a$ and $y = b$ graphically represents lines which are intersecting at……...

SECTION – B

Q09. Prove that: $\tan^2\theta + \cot^2\theta + 2 = \sec^2\theta \operatorname{cosec}^2\theta$.

Q10. If –1 is one zero of $p(x) = 3x^3 - 5x^2 - 11x - 3$, find the other two zeroes.

Q11. Find the HCF of 867 and 255 with the help of Euclid's division algorithm.

Q12. If $\sin\theta + \cos\theta = \sqrt{3}$, then prove that: $\tan\theta + \cot\theta = 1$.

Q13. Three angles of a triangle are x, y and 40°. The difference between the two angles x and y is 30°. Find x and y.

Q14. In ΔPQR, S is any point on QR such that $\angle RSP = \angle RPQ$. Prove that $RS \times RQ = RP^2$.

SECTION – C

Q15. Find mode of the following distribution:

Height ($in\ cm$)	No. of Students
150 – 155	12
155 – 160	9
160 – 165	14
165 – 170	10
170 – 175	5

Q16. Two towers of heights 10m and 30m stand on a plane ground. If the distance between their feet is 15m, find the distance between their tops.

Q17. Mean of the following data is 21.5, find the missing value k :

x :	5	15	25	35	45
f :	6	4	3	k	2

Q18. X and Y are points on the sides PQ and PR respectively of a ΔPQR. If the lengths of PX, QX, PY and YR (in centimeters) are 4, 4.5, 8 and 9 respectively. Then show that XY$||$QR.

Q19. Prove that $\frac{3\sqrt{3}+2}{5}$ is irrational.

Q20. Show that any positive odd integer is of the form $8m$+1 or $8m$+5 or $8m$+7, where m is some positive integer.

Q21. Ram scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each right answers and 2 marks been deducted for each wrong answer, then he would have scored 50 marks. How many questions were there in the test?

Q22. If $a^2\sec^2\theta - b^2\tan^2\theta = c^2$ then, prove that: $\sin^2\theta = \frac{c^2 - a^2}{c^2 - b^2}$.

Q23. If the polynomial given as follow $p(x) = x^4 - 3x^2 + 5x + 3$ is divided by $x^2 - 2$, the remainder is $ax + b$. What will be the quotient? Find also the values of a and b.

Q24. Prove the identity:

$$\frac{1}{\operatorname{cosec} A - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\operatorname{cosec} A + \cot A}.$$

SECTION – D

Q25. Find the mean marks by step deviation method for the following data:

Marks	No. of Students
Below 10	4
Below 20	10
Below 30	18
Below 40	28
Below 50	40
Below 60	70

Q26. Let ABCD is a parallelogram. E is the

midpoint of CD. The line segment joining B and E intersect AC in L and AD produced in M. Prove that LM = 2BL

Q27. Prove that the area of the equilateral triangle drawn on the hypotenuse of a right angled triangle is equal to the sum of the areas of the equilateral triangles drawn on the other two sides of the triangle.

Q28. The height (in cm.) of 60 persons of different age groups are shown in the table below:

Height (in cm.)	No. of persons
$145-150$	8
$150-155$	10
$155-160$	9
$160-165$	15
$165-170$	10
$170-175$	8

Using the above data, draw 'more than' ogive curve. Also find the median of the data from the graph of ogive.

Q29. State and prove converse of Pythagoras theorem.

OR Prove that the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides

Q30. If $\text{cosec}\theta - \sin\theta = m$ and $\sec\theta - \cos\theta = n$, prove that: $(m^2 n)^{2/3} + (mn^2)^{2/3} = 1$.

Q31. Determine the remaining zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\pm\sqrt{\frac{5}{3}}$.

Q32. The median of distribution given on your right side (on the top) is 14.4. Find the values of x and y, if the total frequency is 20.

Class interval	Frequency
$0-6$	4
$6-12$	x
$12-18$	5
$18-24$	y
$24-30$	1

Q33. Evaluate the following:

$$\frac{\sec^2(90^\circ-\theta)-\cot^2\theta}{2(\sin^2 25^\circ+\sin^2 65^\circ)}+\frac{2\sin^2 30^\circ\tan^2 32^\circ\tan^2 58^\circ}{3(\sec^2 33^\circ-\cot^2 57^\circ)}.$$

OR Prove: $\frac{\cos A-\sin A+1}{\cos A+\sin A-1}=\text{cosec}\,A+\cot A$.

Q34. Draw the graphs of the following equations:

$2y+x=13$ and, $2x-y=1$.

(i) Find the solution of the equations from the graph drawn.

(ii) Shade the triangular region formed by the lines and y-aixs.

General Instructions:

(i) All the questions are compulsory.

(ii) The question paper consists of **34 questions** divided into **four sections**, **section A, B, C** and **D**. Questions of Section A are of **1 mark** each, questions of Section B are of **2 marks** each, questions of Section C are of **3 marks** each and, questions of Section D are of **4 marks** each.

(iii) Use of calculators is **not** permitted.