

General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into four sections A, B, C and D. Section – A comprises of 4 questions of 1 mark each; Section – B comprises of 6 questions of 2 marks each; Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 11 questions of 4 marks each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

Section – A

Question numbers 1 to 4 carry one mark each.

1. Evaluate: $\sin^2 31^\circ - \cos^2 59^\circ$.
2. Evaluate: $3 \cot^2 60^\circ + \sec^2 45^\circ$
3. In ΔPQR , S and T are points on the sides of PQ and PR respectively such that $ST \parallel QR$. If $PS = 4$ cm, $PQ = 9$ cm and $PR = 4.5$ cm, then find PT.
4. Find the median of the following distribution:

x_i	1	2	3	4	5	6	7	8
f_i	2	4	6	5	8	0	3	2

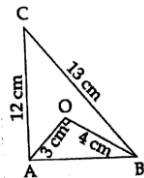
Section – B

Question numbers 5 to 10 carry two marks each.

5. The data regarding measurement of pulse rate of 45 students by the School Doctor is given in the following distribution table. Calculate the average pulse rate of these students:

Pulse rate	60 – 65	65 – 70	70 – 75	75 – 80	80 – 85
Number of students	4	5	22	6	8

6. After how many decimal places will the rational number $\frac{1251}{1250}$ terminate?
7. Find the quadratic polynomial, sum of whose zeroes is 9 and the product is 18. Hence find the zeroes of the polynomial.
8. In the given figure, $OA = 3$ cm, $OB = 4$ cm, $\angle AOB = 90^\circ$, $AC = 12$ cm and $BC = 13$ cm. Prove that $\angle CAB = 90^\circ$.



9. Simplify: $\frac{\tan 28^\circ}{\cot 62^\circ} \div \frac{1}{\sqrt{3}} [\tan 20^\circ \cdot \tan 60^\circ \cdot \tan 70^\circ]$
10. Find LCM of the numbers given below:
m, 2m, 3m, 4m and 5m, where m is any positive integer.

Section – C

Question numbers 11 to 20 carry three marks each.

11. Show that $4 - 3\sqrt{2}$ is an irrational number.
12. Find those integral values of m for which the x – coordinate of the point of intersection of lines represented by $y = mx + 1$ and $3x + 4y = 9$ is an integer.
13. Life time of 400 fans are given in the following frequency distribution:

Life time (in hours)	2000 – 2400	2400 – 2800	2800 – 3200	3200 – 3600	3600 – 4000
Number of fans	50	70	150	100	30

Find the modal life of the fan.

14. Solve the elimination: $3x - y = 7$; $2x + 5y + 1 = 0$
15. In a trapezium diagonals AC and BD intersect at O. If $AB = 3CD$, then find the ratio of areas of triangles COD and AOB.
16. In a right angled $\triangle ABC$, $\angle B = 90^\circ$. If $\frac{BC}{AB} = \frac{1}{\sqrt{3}}$, then find $\frac{AB}{AC}$.
17. Prove the following identity: $(\operatorname{cosec} \theta - \sin \theta) \cdot (\sec \theta - \cos \theta) \cdot (\tan \theta + \cot \theta) = 1$
18. Evaluate: $\frac{3 \tan 25^\circ \cdot \tan 40^\circ \cdot \tan 50^\circ \cdot \tan 65^\circ - \frac{1}{2} \tan^2 60^\circ}{4(\cos^2 29^\circ + \cos^2 61^\circ)}$
19. During a medical checkup of students of class X, their weights were recorded as follows:

Weight (in kg)	Less than 35	Less than 38	Less than 41	Less than 44	Less than 47	Less than 50	Less than 53
Number of students	0	4	6	8	18	33	40

Draw a 'less than type' ogive for the above data, and hence obtain the median from the curve.

20. The sum of digits of a two digit number is 8 and the difference between the number and that formed by reversing the digits is 18. Find the number.

Number of students	4	6	10	14	10	8	6	2
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