DELHI PUBLIC SCHOOL, JAMMU

ASSIGNMENT FOR HALF YEARLY EXAMS (2018-19)

Class:X Sub:-Mathematics

Chapters:

1. **Real Numbers**
2. **Polynomials**
3. **Linear Equations**
4. **Quadratic Equations**
5. **Triangles**
6. **Coordinate Geometry**
7. **Circles**
8. **Introduction to Trignometry**
9. **Application to Trignometry**

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Section A (Objective Type)

1. Find HCF of 135 and 225
2. Find quadratic polynomial whose sum of zeroes is$\sqrt{5}$ and product of zeroes is $\frac{1}{3}$
3. What type of solution x-2y=5 and2x-4y=1 have (unique or infinite or no solution)
4. Find K if equations 4x-6y=1; 2x+ky=7 represents parallel lines in graph.
5. How many zeroes polynomial P(x)= x^7-2x+5 have.
6. Find A if sec(4A) = cosec(A-20°)
7. Check whether 8,6,10 are sides of right angled triangle
8. Value of $\sin^2 35° + \sin^2 55°$ is----------
9. Distance between (3,5) and origin is----------
10. Decimal form of $\frac{1375}{64\times125}$ is ---------

Section B (Very short type)

11. Find the roots by quadratic formula. $\frac{1}{x} - \frac{1}{x-2} = 3$
12. If in ΔPQR MN∥ PR, if QM= 4x, QN= 8x,PM=3x and RN=5x. Find x
13. In Δ PQR, right angled at Q, PR+QR= 25cm and PQ=5cm. find sinP,cosP and tanP.
14. A vertical pole 9m high is broken at certain height due to wind, and its upper part, not completely separated, meets the ground at an angle of 30°. Find the height at which the pole is broken.
15. Prove that tangent at any point of circle is perpendicular to the radius through point of contact.
16. The length of a tangent from a point A at a distance 5cm from centre of the circle is 4cm. find the radius of circle
17. Show that the points (-4,0), (4,0) and (0,3) are vertices of isosceles triangle
18. Prove that every positive even integer is of form 2m and every positive odd integer is of form 2m+1, for any integer m.
19. Prove geometrically that $\sin^2 B + \cos^2 B = 1$
20. Solve for x and y if 2x+ 3y =7 ; 3x – 2y = 5.

Section C (Short type)

21. Prove that $\sqrt{5} + \sqrt{3}$ is an irrational

22. The numerator of a fraction is 3 less than the denominator. If 4 is added to both numerator and denominator, the value of fraction increases by $\frac{1}{8}$, find the fraction.
23. A motor boat whose speed is 18 km/h in still water, takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of stream.

24. A 1.5m tall boy is 28.5m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 60°. What is the height of the chimney?
25. Prove that in a right angled triangle, the square of the hypotenuse is equal to the sum of squares of the other two sides.
26. Find the relation between x and y such that the point (x, y) is equidistant from the points (7,1) and (3,5)

27. Prove that $\frac{1+sec\theta-tan\theta}{1+sec\theta+tan\theta} = \frac{1-sin\theta}{cos\theta}$
28. A straight highway leads to the foot of tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is 60° . Find the time taken by the car to reach the foot of tower from this point.
29. Find k if the points A(k,2-2k), B(-k+1,2k), and C(-4-k,6-2k) are collinear.

30. A quadrilateral HOPE is drawn to circumscribe a circle such that sides HO,OP,PE and EH touches the circle at A,B,C and D respectively. Prove that HO+EP=HE+OP.

Section D (Long Type)

31. A Δ ABC is drawn to circumscribe a circle of radius 4cm. The point of contact D divides BC such that BD= 8cm, DC=6cm respectively. Find AB and AC.
32. Find other zeroes of polynomial P(x) = $2x^4 + 7x^3 - 19x^2$ -14x +30 if two of its zeroes are $\sqrt{2}$ and$-\sqrt{2}$.

33. Find the centre of circle passing through the points (6,-6),(3,-7), and (3,3).
34. Evaluate $\frac{\cos 58°}{\sin 32°} + \frac{\sin 24°}{\cos 66°} - \frac{\cos 38° cosec\, 52°}{tan\, 18° tan\, 35° tan\, 60° tan\, 72° tan\, 55°}$
35. BL and CM are medians of a Δ ABC right angled at A. Prove that $4(BL^2+CM^2) = 5BC^2$.
36. Draw the graph of equations 5x- y = 5; 3x- y = 3. Find the coordinates of the vertices of triangle formed by these lines and y-axis. Also shade the region enclosed in the triangle.
37. PS is the bisector of ∠ QPR of Δ PQR such that PS intersect QR at S. Prove that $\frac{QS}{SR} = \frac{PQ}{PR}$
38. A train covered a certain distance at a uniform speed. If train would have been 10km/h faster, it It would have taken 2 hours less than scheduled time. And, if the train were slower by10km/,it would have taken 3 hours more than the scheduled time. Find the distance covered by train.

39. If A(-2,1), B(a,0), C(4,b) and D(1,2) are the vertices of a parallelogram ABCD, find the values of a and b. Hence find the lengths of its sides.
40. Solve $ax^2 + bx + c = 0$ by method of completing squares.
