

Time Allowed: 3 hours

Maximum Marks: 90

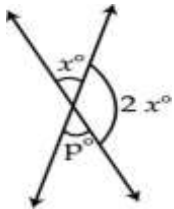
General Instructions:

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 in Sections-A one mark questions

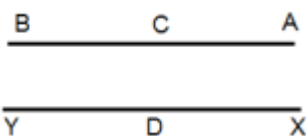
1. Find the value of  $(14641)^{0.25}$
2. Find the value of  $(x-y)^3 + (y-z)^3 + (z-x)^3$
3. In fig. find the value of p



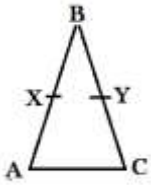
4. What will be mirror image of  $(-3,-4)$  [1]

Section-B comprises of 6 questions of 2 marks each

5. If  $z = 0.064$  then find the value of  $(1/z)^{1/3}$
6. Without actual calculation find the value of  $(100)^3 - (60)^3 - (40)^3$
7. In fig  $AC = XD$ . C and D are midpoint of AB and XY respectively. Using Euclid's axiom show that  $AB = XY$

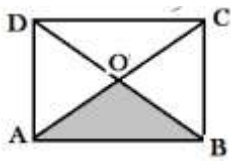


8. In fig,  $AB = BC$  and  $BX = CY$ . Show that  $AX = CY$  State the Euclid's axiom used.



9. Find the co – ordinates of the vertices of the square ABCD (Side =a), taking AB and AD as axes .

10. In given fig. ABCD is rectangle where  $AB= 8$  cm and  $BC = 6$  cm and the diagonal bisect at O. Find the area of shaded region by heron formula.



Question numbers 11 to 20 in Sections - C are three marks questions

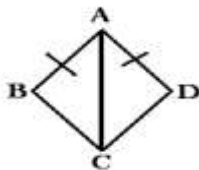
11. Solve it  $(\sqrt{5} + \sqrt{2})^2 - (\sqrt{8} - \sqrt{3})^2$

12. Rationalize denominator:  $(4\sqrt{3} + 5\sqrt{2})/(4\sqrt{3} + 3\sqrt{2})$

13. Factorize:  $(x-y)^2 - 7(x^2 - y^2) + 12(x+y)^2$

14. For what value of m, is the  $p(x) = 3x^3 + 2mx^2 + 3x + 6$  is exactly divisible by  $(x+2)$  ? Hence factorize the polynomial.

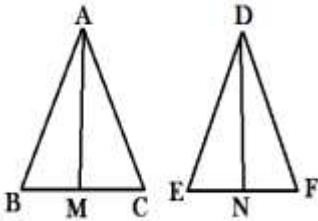
15. In fig. ABCD;  $AB = AD$  and AC is the bisector of  $\angle A$  . Show that  $\triangle ABC \cong \triangle ADC$  and  $BC = DC$



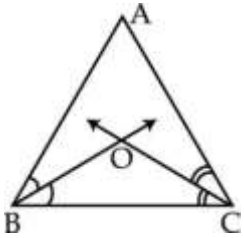
16. Simplify :  $\sqrt[5]{x^4 \sqrt[4]{x^3 \sqrt[3]{x^2 \sqrt{x}}}}$

17. if bisectors of the pairs of alternate angle formed by a transversal with two given lines are parallel, prove that the given lines are parallel.

18. In fig,  $AB = DE$  ;  $BC = EF$  and median  $Am = DN$  . Prove that  $\triangle ABC \cong \triangle DEF$



19. In the given figure the bisectors of  $\angle ABC$  and  $\angle BCA$  intersect each other at O. Prove that  $\angle BOC = 90 + \frac{1}{2}\angle A$ .



20. Perimeter of a triangle is 450 m and its sides are in the ratio 13 : 12 : 5. Find the area of the triangle and smallest altitude.

Question numbers 21 to 31 in Sections – D are four marks questions.

21. If  $(x^2 - 1)$  is a factor of  $ax^4 + bx^3 + cx^2 + dx + e$ , show that  $a + c + e = b + d = 0$

22. Show that  $\frac{1}{1+x^{a-b}} + \frac{1}{1+x^{b-a}} = 1$

23. Factorize:  $(m + 2n)^2 + 101(m+2n) + 100$

24. Simplify:  $(a+b)^3 + (a-b)^3 + 6a(a^2 - b^2)$

25. if  $a + b + c = 9$  and  $ab + bc + ac = 40$  Find  $a^2 + b^2 + c^2$

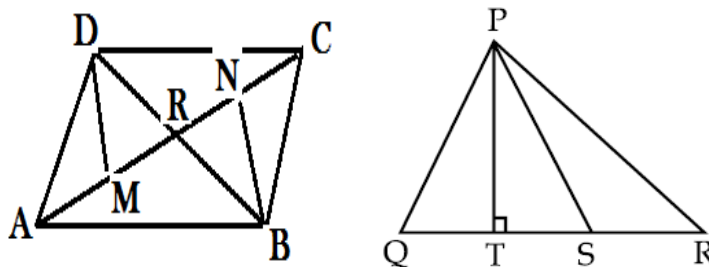
26. simplify:  $\frac{(a^2-b^2)^3 + (b^2-c^2)^3 + (c^2-a^2)^3}{(a-b)^3 + (b-c)^3 + (c-a)^3}$

27. If  $x + y + z = 1$ ,  $xyz = -1$  and  $xy + yz + zx = 1$ , find the value of  $x^3 + y^3 + z^3$ .

28. Diagonal of quadrilateral PQRS meet at O prove that  $PQ + QR + RS + SP = PR + QS$

29. O is point in the interior of  $\triangle ABC$ , prove that  $OP + OQ + OR > \frac{1}{2}(PQ+QR+PR)$

30. In fig. BM and DN are both perpendicular to AC and  $BM = DN$ . Prove that AC bisect BC



31. in fig. PS is bisector of  $\angle PQR$  and  $PT \perp QR$ . Show that  $\angle TPS = \frac{1}{2}(\angle Q - \angle R)$