INDIAN SCHOOL DARSAIT
MID TERM EXAMINATION, SEPTEMBER 2017
SAMPLE QUESTION PAPER(Set-2)

MATHEMATICS

Class : IX Max Marks :80

Time : 3 hrs

General Instructions:

(i) All questions are compulsory.

(ii) The question paper consists of 30 questions divided into four sections A, B, C, and D. Section A comprises of 6 questions of 1 mark each, section B comprises of 6 questions of 2 mark each, section C comprises of 10 questions of 3 mark each , section D comprises of 8 questions of 4 mark each.

(iii) Use of calculator is not permitted.

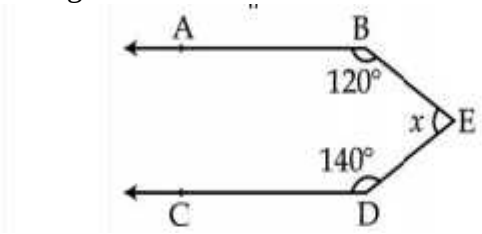
SECTION - A

Question numbers 1 to 6 carry one mark each.

1. Find the value of $(14641)^{0.25}$. 1

2. If $x^{51} + 51$ is divided by $x + 1$ then, find the remainder. 1

3. In the figure AB II CD. find the value of x 1



4. ΔABC is an isosceles right angled triangle in which $\angle A = 90^0$. Calculate $\angle B$. 1

5. What will be mirror image of (-3,-4) 1

6. Find the point where $3x + 2y = 12$ intersects x axis. 1

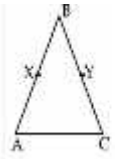
SECTION – B

Question numbers 7 to 12 carry 2 marks each.

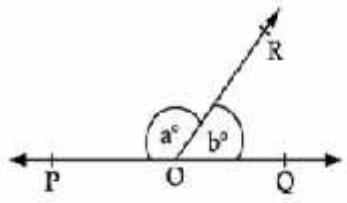
7. Represent $\sqrt{5}$ on number line. 2

8. Factorise $36 - (x^2 - 8x + 16)$. 2

9. In the given figure AB = BC and BX = BY. Show that AX = CY. State the Euclid axiom used. 2



10. In the given figure, if $\angle$POR and $\angle$QOR form a linear pair and a-b = 80^0 then find the value of a and b. 2



11. Plot the point (- 5, 1) and from it draw PM and PN perpendicular to x-axis and y-axis respectively. Write the co-ordinates of M and N. 2

12. Check whether the points (1,2), (-1,-16), (3,-7) lie on the line y = 9x -7. 2

SECTION – C

Question numbers 13 to 22 carry 3 marks each.

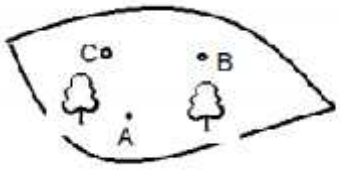
13. If a = $9 - 4\sqrt{5}$, then find the value of $a^2 + \frac{1}{a^2}$ 3

14. If $\left(\frac{a}{b}\right)^{x-1} = \left(\frac{b}{a}\right)^{2x-8}$ then find the value of x. 3

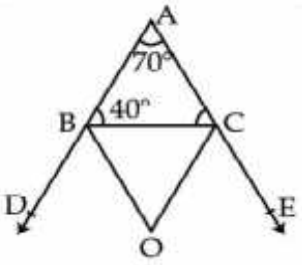
15. Factorise: $1000x^3 + 1331y^3 + 3300x^2y - 3630y^2x$. 3

16. Find the value of $(x-a)^3 + (x-b)^3 + (x-c)^3 - (x-a)(x-b)(x-c)$ *where* $a + b + c = 3x$ 3

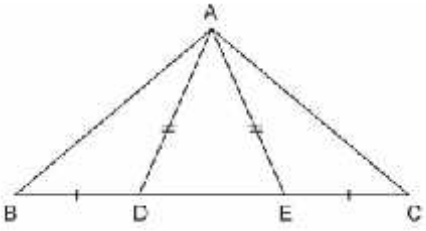
17. Three light house tower are made at point A,B and C in the national forest to protect animals from hunters by the forest department as shown in figure. Which value in department exhibiting by making lighthouse towers? How many straight lines can be drawn from A to C. State the Euclid axiom which states the required result? Give one more Postulate. 3



18. In the figure, BO and CO are bisectors of $\angle$DBC and $\angle$ECB respectively. If $\angle$BAC = 70^0 and $\angle$ABC = 40^0, find the measure of $\angle$BOC. 3



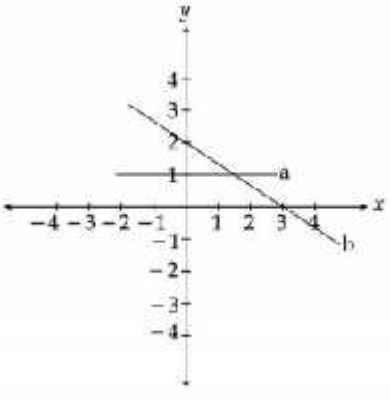
19. D and E are points on side BC of ΔABC such that BD = CE and AD = AE. Show that ΔABD ≅ Δ ACE. 3



20. In an isosceles triangle LMN the sides LM = LN. MP and NQ are two medians of the triangle. Show that MP= NQ. 3

21. (i) Plot the points M(4,3), N(4,0), O(0,0), P(0,3). 3
(ii)Name the figure obtained by joining MNOP.
(iii)Find the perimeter of the figure.

22. A student wrote the equations of the lines a and b drawn in the following graph as y =1 and 2x +3y = 6. Is he right? If yes, write coordinates of point of intersection lines a and b. 3



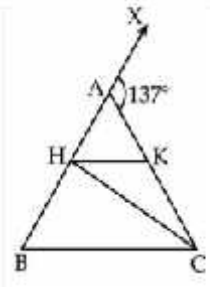
SECTION – D

Question numbers 23 to 30 carry 4 marks each.

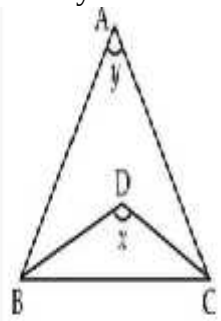
23. If $x^a = y$, $y^b = z$, and $z^c = x$, then prove that abc = 1. 4

24. Factorise : $x^3 - 6x^2 + 11x - 6$ 4

25. In the figure AB = AC, CH = CB and HK II BC. If $\angle CAX = 137^0$ then find $\angle CHK$ 4

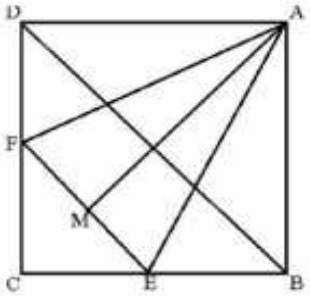


26. In Δ ABC ,BD and CD are internal bisectors of $\angle$B and $\angle$ C respectively. 4
Prove that $180^0 + y = 2x$.

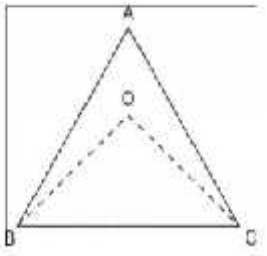


27. In the figure ABCD is a square and EF is parallel to diagonal BD and EM = FM. 4
Prove that

(i) DF = BE (ii)AM bisects $\angle$BAD



28. In the figure the bisectors of $\angle$ABC and $\angle$BCA intersect each other at the point O. 4
Prove that $\angle$BOC $=90^0 + 1/2\ (\angle A)$



29. If the co-ordinates of a point M are (-2,9) which can also be expressed as ($1+x, y^2$) 4
and y>0, then find in which quadrant do the following points lie: P(y,x), Q(2,x), $R(x^2, y-1)$, S(2x, -3y).

30. Draw the graphs of the following equations on the same graph sheet : 4
x =4, x=2, y =1, y-3 =0. Also find the area enclosed between these lines.