 **SINDHI HIGH SCHOOL, BENGALURU**

**HALF YEARLY EXAMINATION [2023-24]**

**SUBJECT: MATHEMATICS**

**Max Marks: 80**

**Class: IX Duration: 3 hrs 15 mins**

**Date: 07.10.2023 Reading Time: 15 mins**

**No of Sides: 05 Writing Time: 3 hrs**

**GENERAL INSTRUCTIONS:**

* This Question Paper has 5 Sections A-E.
* Section A has 20 MCQs carrying 1 mark each
* Section B has 5 questions carrying 02 marks each.
* Section C has 6 questions carrying 03 marks each.
* Section D has 4 questions carrying 05 marks..
* Section E has 3 case based integrated units of assessment carrying 4 marks

sub-parts of the values of 1, 1 and 2 marks each.

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|  | **Section A** |  |
|  | **Section A consists of 20 questions of 1 mark each.** |  |
| 1 | If x= 1 then the value of is  a)1 b) 1 c) 1 d) 1 | **1** |
| 2 | The decimal expansion of 4 is  a)terminating b)non terminating repeating  c) non terminating nonrepeating c) none of these. | **1** |
| 3 | The simplified value of x is  a)16 b)4 c)1 d)0 | **1** |
| 4 | After rationalising the denominator of the denominator is  a)6 b)7 c)-6 d)-7 | **1** |
| 5 | The number of lines that can be drawn through two points is  a)1 b)2 c)3 d)infinite | **1** |
| 6 | The angle equal to its supplement is  a)900 b)0 c).0 d)1000 | **1** |
| 7 | If AOC = 500 then the sum of AOD and COB is equal to        a)1000 b)1400 c)2600 d)1300 | **1** |
| 8 | If line PQ, then the value of x is   1. 40 b)30 c)45 d)15 | **1** |
| 9 | Diagonals of a rhombus ABCD intersect each other at O then the measurements of vertically opposite AOB and COD is  a)300, 30 0 b)450, 450  c)600, 600 d)900, 900 | **1** |
| 10 | Which of the following is not a criteria for congruency of triangles?  a)SAS b)RHS c)AAA d)SSS | **1** |
| 11 | ABC is right angled at B. If AB=AC then is equal to  a) b)90° c) 60° d)1200 | **1** |
| 12 | The ordinate of all points on x-axis is  a)0 b)1 c)-1 d)any number | **1** |
| 13 | Signs of abscissa and ordinate of a point in the second quadrant is  a)(+,+) b)(-,- ) c)(-,+) d)(+,-) | **1** |
| 14 | Which of the following points lie on the line y= -x  a)(2,2) b)(2,-2) c)(3,3) d)(-2,3) | **1** |
| 15 | The linear equation 3y-5=0 has  a)unique solution b)infinitely many solutions  c)two solutions d)no solution | **1** |
| 16 | If the linear equation has solutions (-3,3),(0,0) and (3,-3) then equation is  a)x-y = 0 b)x+y=0 c)2x-y=0 d)x+2y = 0 | **1** |
| 17 | In an exhibition cost of ticket for an adult is Rs 5 more than twice the cost of ticket for a child.Which equation relates cost y of adult ticket to cost x of child ticket  a)y=2x+5 b)y=x+5 c)y=3x+5 d)y=2+5x | **1** |
| 18 | A parallelogram ABCD has a perimeter 36cm and one of its side as 8,then the length of the other side of the parallelogram is  a)5cm b)8cm c)10cm d)12cm | **1** |
| 19 | **ASSERTION- REASON BASED QUESTIONS:** In the following questions, a statement of assertion (A) is followed by a statement of Reason (R).  **Options for 19 and 20.**  Choose the correct answer out of the following choices.  (A) Both A and R are true and R is the correct explanation of A.  (B) Both A and R are true but R is not the correct explanation of A.  (C) A is true but R is false.  (D) A is false but R is true.  **Assertion(A):**  **Reason(R)** : The decimal expansion of an irrational number is non terminating and repeating . | **1** |
| 20 | **Assertion(A)**: x=4 is a line parallel to x axis  **Reason(R)**: The equation of a line parallel to y axis is of the form x=k, k is a constant | **1** |
|  | **Section B consists of 5questions of 2 marks each.** |  |
| 21 | Prove that every line segment has one and only one midpoint on it. | **2** |
| 22 | Let P(3,2) and Q(7,7) be two points. Perpendiculars are drawn to x-axis from P andQ meeting x- axis at L and M. Find the length LM**.** | **2** |
| 23 | Determine the point on the line 2x+5y=20 whose x coordinate is 5/2 time its ordinate? | **2** |
| 24 | Find two solutions of 4x+3y=24. How many solutions of this equation are possible? | **2** |
| 25 | ABCD is a quadrilateral in which P,Q, R, S are midpoints of AB,BC,CD,DA respectively. Show that SR and SR = . | **2** |
|  | **Section C consists of 6questions of 3 marks each.** |  |
| 26 | If then find the values of a and b. | **3** |
| 27 | Ray OD stands on line AOB. Ray OC and ray OE are angle bisectors of and respectively. Show that COE = 900 | **3** |
| 28 | In ABC, AB=AC. E and F are points on AB and AC such that AE=AF.  Prove that ABF ACE. Also show that BE=CF. | **3** |
| 29 | In the figure, is an equilateral triangle with coordinates of Q and R are (0,5) and (0,-5) respectively . Find the coordinates of vertex P lying on the positive side of x axis. | **3** |
| 30 | ABCD is a parallelogram and E is the midpoint  of BC. DE and AB on producing meet at F.  Prove that AF=2AB | **3** |
| 31 | In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ  Show that i)∆ APD ≅ ∆ CQB (ii) ∆ AQB ≅∆ CPD iii) APCQ is a parallelogram | **3** |
|  | **Section D consists of 4 questions of 5 mark** |  |
| 32 | Represent on a number line and justify. | **5** |
| 33 | Prove that two triangles are congruent if two angles and a included side of one triangle is equal to two angles and an included side of other triangle. | **5** |
| 34 | For what value of p, x=2 and y=3 is a solution of (p+1)x (2p+3)y-1=0.  i)Write the linear equation.  ii) Represent it graphically.  iii) Find the coordinates of point when the line cuts x-axis and y-axis. | **5** |
| 35 | ABCD is the trapezium in which AB. BD is the diagonal and E is midpoint of AD. A line drawn through E and parallel to AB intersecting BC at F. Show that F is the midpoint of BC. | **5** |
|  | **Section E** |  |
|  | **Section E consists of 3 Case base study questions of 4 mark** |  |
| 36 | WhatsApp Image 2023-09-10 at 11  Euclid a teacher of mathematics at Alexandria in Egypt,collected all the known work of “Thales” and “Pythagoras” and arranged it in 13 chapters each called a book,which gave the whole world understanding of Geometry.  Six boys A, B, C, D, E and F are sitting along a straight line.  Answer the following:  i)If AC=BD then use Euclid’s axiom to show that distance between AB is equal to distance between CD. (2marks)  ii) What is the name given to Euclid”s written treatise? (1mark)  iii)State any one Euclid’s axiom which is not used to prove (i) | **4** |
| 37 | An aquarium has two mirrors back PQ and front RS respectively. PQ is parallel to RS. An incident ray strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflect back along CD.  WhatsApp Image 2023-09-10 at 11  i)Prove that ABCD (2marks)  ii) If 2 =300 then find BCD.(1mark)  iii) How will you justify BMN.(1mark) | **4** |
| 38 | Mr. X is participating in n 8 mile walk. The starting point is A. At B there is water station to make sure the walkers stay hydrated. From water station the walkway turns right at C a garden is situated. From the garden, walkway turns left and finally reaches the destination D to complete 8 miles?  Based on the above information answer the following,  i)Write the coordinates of A,B,C,D? (2mark)  ii)How far is water station B from A? (1mark)  iii) What is the ordinate of water station? (1mark) | **4** |

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