 **SINDHI HIGH SCHOOL, BENGALURU**

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

**SUBJECT: MATHEMATICS BASIC**

**Class: X Max Marks: 80**

**Duration : Duration : 3hrs 15 mins**

**Date:19/09/2023 Reading Time: 15 mins**

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

**GENERAL INSTRUCTIONS:**

* This Question Paper has 5 Sections A, B, C, D and 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 each.
* Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each.
* All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided.
* Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

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|  | **Section A** |  |
|  | **Section A consists of 20 questions of 1 mark each.** |  |
| 1 | The HCF of least prime number and least composite number is  a) 12 b) 8 c)2  d)4 | **1** |
| 2 | A= 3n 25 and B= 33  25 . LCM= 35  25. The value of n is  a)  5      b) 3 c) 10           d) 27 | **1** |
| 3 | If one zero of the quadratic polynomial 2x2 5kx 7 is negative of other, then K is equal to  a)-1     b)1     c)0           d) - 1 / 2 | **1** |
| 4 | The equation of parabola which intersects the points (-2,0) and (-3,0) is   1. y =  x2-5x+6 b) y= x2+5x+6   c)  y= x2 -  2x - 12    d) y= x2 5 x + 10 | **1** |
| 5 | The straight line 2x+y=6 cuts x-axis at   1. (5,0)    b) (4,0)       c) (3,0)    d) (0,3) | **1** |
| 6 | If the pair of linear equations in two variable are consistent dependent , then which of the following is correct?   1. b)     c) d) | **1** |
| 7 | Two equilateral triangle are similar by which of the following criterion?  a)SSS b) SAS c)AAA d) all these | **1** |
| 8 | In triangle LMN PQ MN. If = then   1. b) c) d) | **1** |
| 9 | ABC PQR such that = =P. Then which of the following criterion is justified?  a)SSS     b)RHS    c) SSA    d) SAS | **1** |
| 10 | The triangle with vertices (0,0) (3,0) ( 0,5) is a/an  a)Right triangle     b) Equilateral triangle  c) Right isosceles triangle     d) Right scalene triangle. | **1** |
| 11 | Which of these equal to tan  a) b) c) d) | **1** |
| 12 | The length of perpendicular from the point P(-2,5) on x- axis is  a)-2units b)2unitts c)5units d)7 units | **1** |
| 13 | If P( 4,) cuts the join of A(x,2) and B( 3, 4) in the ratio 2:1 then value of x is  a) b)10       c)-6       d) | **1** |
| 14 | Sin = cos the value of tan+ sec  a)1 + b) 2 c) 0 d) | **1** |
| 15 | The value of x if median of these arranged data 13, 14 ,2x1, 16, 20 is 15  a)17      b) 7   c)  18      d) 15 | **1** |
| 16 | The distance of the point -2,4) from the origin is   1. b)5units c) d) 25units. | **1** |
| 17 | Which of the following is correct?  a)2mean = 3median mode   b) 2mean = 3median mode  c) mode= 2mean3median   d)2mean = 3medianmode | **1** |
| 18 | Probability of getting 2 heads when a coin is tossed  a) b) c) d) . | **1** |
| 19 | **Assertion(A):**  A secant cuts circle at 2 points.  **Reason( R):**The between the tangent and radius through the point of contact is 600  a)Both Assertion(A) and Reason (R) are true and  Reason( R)  is the correct explanation of (A)  b)Both Assertion(A) and Reason (R) are true and  Reason( R)  is not the correct explanation of (A)  c)Assertion(A)  is true and  Reason( R)  is false  d)Assertion(A)  is  false and  Reason( R)  is true | **1** |
| 20 | **Assertion(A):**If E is any event then p(E) can be 4/3  **Reason( R):** If E is an event then **0** p(E)1  a)Both Assertion(A) and Reason (R) are true and  Reason( R)  is the correct explanation of (A)  b)Both Assertion(A) and Reason (R) are true and  Reason( R)  is not the correct explanation of (A)  c)Assertion(A)  is true and  Reason( R)  is false  d)Assertion(A)  is  false and  Reason( R)  is true | **1** |
|  | **SECTION-B** |  |
|  | **Section B consists of 5 questions of 2 marks each** |  |
| 21 | In the triangle ABC DE BC, find x. | **2** |
| 22 | Find the zeros of the polynomial x2 12 x + 35 and also verify the relation between zeros and coefficient | **2** |
| 23 | Find x, if x sin 300 + =  cos 600  **OR**  Cot= evaluate | **2** |
| 24 | Find the smallest number which is divisible by 72 and 36  **OR**   Find the largest number which divides 300 and 600 . | **2** |
| 25 | In the figure LM BC and LN CD, prove that = | **2** |
|  | **SECTION-C** |  |
|  | **Section C consists of 6 questions of 3 marks each** |  |
| 26 | Katya has 49 paintings and 35 medals. She wants to display them in groups throughout her house, each with same combination of paintings and medals with none left over. What is the greatest number of groups Katya can display ? | **3** |
| 27 | If Kx 2 y + 8=0  and 5x + 7y + 5=0  are inconsistent pair of linear equations in two variables, find k.  Name the graphical representation of these pair of linear equations.  **OR**   Represent X=7 and Y = 8 graphically. Find the area of the region formed by these lines with coordinate axes. | **3** |
| 28 | D is a point on the side BC of a ABC such that =BAC . Show that CA2= CB.CD  **OR**  The diagonals of a quadrilateral ABCD intersect each other at the point O such that =. Show that ABCD is a trapezium. | **3** |
| 29 | Prove that  “If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio” | **3** |
| 30 | Mode of below distribution is 67. Find the unknown frequency x   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Variable | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | | Frequency | 5 | x | 15 | 12 | 7 | | **3** |
| 31 | Prove that the tangents drawn at the ends of a diameter of a circle are parallel.  **OR**   A quadrilateral ABCD is drawn to circumscribe a circle. Prove that AB+CD = AD+BC | **3** |
|  | **SECTION-D** |  |
|  | **Section D consists of 4 questions of 5 marks each** |  |
| 32 | The sum of the digits of a two digit number is 15. The number obtained by interchanging the digits exceeds the given number by 9. Find the number..  **OR**  The present age of woman is 3 years more than three times the age of her daughter. Three years hence , the woman’s age will be 10 years more than twice the age of her daughter. Find their present age. | **5** |
| 33 | + = 2secA  OR  + = 1+secAcosecA | **5** |
| 34 | Find the fourth vertex D of the parallelogram ABCD whose three vertices are  A(-2,3) B( 6,7) and C( 8,3). Find the lengths of diagonals. If the altitude drawn from the vertex A is 10units, find the area of the triangle. | **5** |
| 35 | Calculate mean, median and mode of below distribution. .   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | CI | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 | 85-90 | | F | 5 | 20 | 10 | 10 | 9 | 6 | 12 | 8 | | **5** |
|  | **SECTION-E** |  |
|  | **Section E consists of 3 case study based questions.** |  |
| 36 | WhatsApp Image 2023-09-11 at 22  A triangular backyard is in the shape of triangle with right angle at B. A pit was dig inside it such that it touches the walls AC,BC and AB at P, Q and R respectively. BR=2m and AP= 4m  i)Find the radius of the pit. (2marks)  ii) Find the length of wall AB (1mark)  iii)What is the measure of the angle OPC (1mark) | **4** |
| 37 | WhatsApp Image 2023-09-11 at 21  The class 10 students in Krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is rectangular grassy lawn in the plot as shown in the figure. The students are to sow seeds on the remaining area of the plot.  **Answer the following**.  i)Write the coordinate of points P and R (1mark)  ii) Based on sides mention the type of PQR (2marks)  iii)Write the coordinates of midpoint of the side PR. (1mark) | **4** |
| 38 | On a weekend Ravi was playing cards with her family. The deck has 52 cards. If her brother drew one card find  C:\Users\Mahesh\AppData\Local\Microsoft\Windows\INetCache\Content.Word\WhatsApp Image 2023-09-11 at 21.54.10.jpg  i)Find the probability of getting a red king.  ii) Find the probability of getting a face card.  iii) Suppose 5 black and 4 red cards are missing , find the probability of getting a black card. | **4** |

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