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**SINDHI HIGH SCHOOL, BENGALURU**

**PREBOARD EXAMINATION-II [2023-24]**

**SUBJECT: MATHEMATICS BASIC**

**Class: X SET-2 Max Marks: 80**

**Date:06/01/2024 Reading Time:8:30-8:45am**

**No of Sides: 05 Writing Time: 8:45-11:45am.**

**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 exponent of 2 in the prime factorisation of 144 is  a)4 b)5 c)6  d)3 | **1** |
| 2 | The LCM of two numbers is 1200. Which of the following cannot be their HCF?  a)600        b)500 c)400           d) 200 | **1** |
| 3 | The value of k if the equation 3x2-kx +1=0 has equal real roots  a)2     b)1     c)4     d) | **1** |
| 4 | One equation of a pair of consistent linear equations is -5x+7y=2, the second equation can be  a) 10x-14y =4 b)10x-14y-4=0  **c)**x=0     d) x-3y=10 | **1** |
| 5 | The equation x2 +7=0 has  a)distinct real roots   b)distinct non real roots.  c) real equal roots   d)equal non real roots | **1** |
| 6 | The endpoints of the diameter of the circles are (x,4) and (5,2). If 9(0,3) is the centre of the circle, then the value of ‘x’ is  a)3 b)3 c)-5 d)5 | **1** |
| 7 | In the ABC which is right angled at A , ADBC. Under which of the following criteria ABD CBA  a)SSS b)AA c) SAS d) RHS | **1** |
| 8 | In the given figure = and ADE=700,  BAC=500 then BCA =  a)700  b)500  c) 800 d)600 | **1** |
| 9 | If angle between the radii of a circle is1000 , then the angle between the tangents at the end of these two radii is  a) 900     b)400  c)500 d) 800 | **1** |
| 10 | If sin+ =1 then is  a) 1 b) 1 c) d)1 | **1** |
| 11 | is  a) b)-1 c) d) | **1** |
| 12 | The ratio of the height of tower and the length of its shadow on the ground is  1: .  a)300 b)450 c) 600 d)1800 | **1** |
| 13 | If the circumferences of two circle are in the ratio 4:9, then the ratio in their area is  a)9:4 b)4:9 c)16:81 d2:3 | **1** |
| 14 | Perimeter of a quadrant of a circle of radius ‘r’ is equal to  +2r b)2r + c)2+2r d) r+ | **1** |
| 15 | One card is drawn from a well shuffled deck of 52 playing cars. The probability of getting a non-face card is  a) b) c)  d) | **1** |
| 16 | The mean and median of the same data are 24 and 26 respectively. The value of mode is  a)23 b)26 c)25 d)30 | **1** |
| 17 | If two solid hemispheres of the same base radius r joined together along their bases, then surface area of this new solid is  a)4      b) 2         c) 3          d) 8 | **1** |
| 18 | The mean of 5 numbers is 18. One number is excluded their mean becomes 16. The excluded number is  b)24 c) 25 d)26 . | **1** |
| 19 | . Assertion(A): If P(x,y) is a point on the cartesian plane ,then “y” is perpendicular distance P from y-axis.  **reason( r):**. If P(x,y) is a point on the cartesian plane then abscissa of the point is perpendicular distance of the point from y –axis.  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 the given numbers are 38 and 52 their HCF can not be equal to 150.  Reason( R): Since HCF of the numbers divides the numbers it cannot exceed the given numbers.  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 | Find k if following pair of linear equations in two variables are consistent dependent  3kx+4y-14=0 ; 5x-2y +7=0. | **2** |
| 22 | In the given figure PE=4.8cm, EQ=2.4cm , PF =6.2cm and FR=3.1cm. Check if EF QR.  OR  In the given figure DE AC and DFAE. Prove that =  C:\Users\Mahesh\AppData\Local\Microsoft\Windows\INetCache\Content.Word\WhatsApp Image 2023-12-09 at 22.25.12_714b02af.jpg | **2** |
| 23 | Prove that the of tangents drawn from an external point of a circle are equal in length. | **2** |
| 24 | Evaluate | **2** |
| 25 | A chord of circle of radius 5cm subtends 450 at the centre. Find the area of the sector so formed.  OR  The radii of the two circles are 19cm and 9cm respectively. Find the radius of the circle which has a circumference equal to the sum of the circumferences of the two circles. | **2** |
|  | **SECTION-C** |  |
|  | **Section C consists of 6 questions of 3 marks each** |  |
| 26 | Find LCM and HCF of 252 and 594 and verify that LCM HCF = product of numbers. | **3** |
| 27 | Find the zeros 2x2-7x -15 of the polynomial and also verify the relationship between the zeros and the coefficients. | **3** |
| 28 | The sum of present ages of Madhu and Raju is 11 years. Madhu is elder than Raju by 9 years. Find their present ages .  OR  A fraction becomes , if 1 is added to both numeratior and denominator. I f however, 5 is subtracted from both numerator and denominator the fraction become . Find the fraction. | **3** |
| 29 | Prove that the parallelogram circumscribing a circle is a rhombus. | **3** |
| 30 | In the give figure find sinP -CosR  C:\Users\Mahesh\AppData\Local\Microsoft\Windows\INetCache\Content.Word\WhatsApp Image 2023-12-09 at 22.32.44_f858301a.jpg  OR  If 3cotA=4, check whether = - | **3** |
| 31 | Two dice are rolled simultaneously. Answer the following.  i)List the outcomes when the numbers on two faces are same.  ii)Find the probability of getting sum of numbers less than 6  iii) Find the probability of getting sum of numbers more than 6 | **3** |
|  | **SECTION-D** |  |
|  | **Section D consists of 4 questions of 5 marks each** |  |
| 32 | A travels a distance of 480km at a uniform speed . If the distance had been 8km/hr less ,then it would have taken 3hrs more to cover the same distance. Find the original speed of the train.  OR  Two pipes running together can fill a cistern in 3minutes. If one pipe takes 3 minutes more than the other to fill it , find the time in which faster pipe would fill the cistern. | **5** |
| 33 | 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”  In the ABC , DE BC , find the length of AD. | **5** |
| 34 | From a solid cylinder whose height is 15cm and the diameter 16cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid. Also volume of the solid so formed.  OR  A juice seller was serving his customers using glasses as shown. The inner diameter of the cylindrical glass was 5cm but the bottom of the glass had hemispherical raised portion which reduced the capacity of the glass. If height of a glass was 10cm, find the apparent capacity of the glass and its actual capacity.  C:\Users\Mahesh\AppData\Local\Microsoft\Windows\INetCache\Content.Word\WhatsApp Image 2023-12-09 at 23.34.06_c0cabb3a.jpg | **5** |
| 35 | Find the mean, median and mode of the following distribution.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Number of plants | 0-2 | 2-4 | 4-6 | 6-8 | 8-10 | 10-12 | 12-14 | | Number of houses | 1 | 2 | 1 | 5 | 6 | 2 | 3 | | **5** |
|  | **SECTION-E** |  |
|  | **Section E consists of 3 case study based questions.** |  |
| 36 | In a pathology lab, a culture test was conducted. In the test, the number of bacteria taken into consideration in various samples are all 3-digit numbers that are divisible by 7 taken in order.  On the base of the above information answer the following questions.  WhatsApp Image 2023-12-09 at 20  i)Find the number of bacteria found in the 10th sample.  ii) Can there be 103 bacteria in any of the samples?  iii)How many samples were taken into consideration?  OR  Find sum of all bacteria taken into consideration. | **4** |
| 37 | Karan went to the lab near his home for COVID 19 test along with his family members. The seats in the waiting areas were as per the norms of distancing during this pandemic (as shown in the given figure). His family members took their seats surrounded by the circular area. WhatsApp Image 2023-12-09 at 20  i)Write the coordinate of the point representing Akash and Neena.  ii) Find the length of line segments joining points Neena and Bina  iii)How far is Akash from the entry point?  OR  What type of quadrilateral does the points joining Akash, Bina , Karan and Neena represent? | **4** |
| 38 | In a village a group of people complained for an electric fault in their area. On their complaint , an electrician reached village to repair it on a pole of height 5m. He needs to reach a point 1.3m below the top of the pole to undertake the repair work. He used the ladder inclined at an angle of to the horizontal such that cos =0.5 to reach the required position.  WhatsApp Image 2023-12-09 at 21  i)Find the measure of angle  ii)How far is the ladder from the foot of the pole when the angle of inclination is 600  iii) Find the length of the ladder.  .OR  If the angle of inclination of the ladder is 300, find the length of AB. | **4** |

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