

** SINDHI HIGH SCHOOL, BENGALURU**

**PRE BOARD EXAMINATION [2023-24]**

**SUBJECT: MATHEMATICS BASIC (241)**

**Class: X SET -1 Max Marks: 80**

**Date:24/01/2024 Reading Time: 8:30 – 8:45am**

**No of Sides: 06 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 respectively.
* 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. An internal choice has been provided in the 2marks questions of Section E.
* Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

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|  | **Section A** |  |
|  | **Section A consists of 20questions of 1 mark each.** |  |
| 1 | If xy = 3072 and HCF ( xy) = 16 , then LCM ( x y) is  a)192     b)129     c)64 d)3072 | **1** |
| 2 | Prime factorization of two numbers are 23 x 32 x 5 x 13 and 2 x 33 x 13. The HCF of these numbers is  a)23 x 32 x 5 x 13     b)23 x 33 x 5 x 13  c)2 x 32 x 5 x 13 d)2 x 32 x 13 | **1** |
| 3 | A quadratic polynomial whose zeroes are -3 and 4 is  a)x2 – x + 12   b)x2 – x - 12  c)  + - 6 d) + + 6 | **1** |
| 4 | The pair of equations 2x+3y +6= 0 and -4x – 6y = - 12 have a)Unique solution b Exactly two solutions  c)Infinitely many solutions d)No solution | **1** |
| 5 | The nature of the roots in quadratic equation 4x2 +4x +1 is  a)Real and equal b)Real and distinct  c)Real and only irrational d)No real roots | **1** |
| 6 | The distance of the point A( -6 , 8 ) from origin is  a)8u     b)2 u     c)10u  d)6u | **1** |
| 7 | If in two triangles ABC and PQR ,  , then a)    b) c)  d) | **1** |
| 8 | If in triangles ABC and DEF,  , then they are similar, if a) ∠B = ∠E b) ∠A =∠D c) ∠B = ∠D d) ∠A = ∠F | **1** |
| 9 | A quadrilateral ABCD is drawn to circumscribe a circle with centre ‘O’. If AB= 6cm , CD = 8cm , and AD= 5cm , then the length of BC is  a)9cm     b) 8cm       c)  6cm d)  5cm | **1** |
| 10 | If 5cos = 4 , then the value of sin is  a)5   b)       c)  d) | **1** |
| 11 | If height of a tower and distance of the point of observation from its foot, both are increased by 50 then the angle of elevation of its top  a)Remains unchanged b)Get doubled  c)Increases by 50 d)Halved | **1** |
| 12 | 9 cosec2 - 9 cot2  a)9     b)  1     c)8 d)- 9 | **1** |
| 13 | The perimeter of semi circular protractor is 72cm. The radius of the protractor is  a)  cm   b)14 cm   c) cm d) cm | **1** |
| 14 | The angle Described by the minute hand in 5 minutes is  a)50   b)400      c)150 d)300 | **1** |
| 15 | Two dice are thrown together. The probability of getting the same number on both dice is  a) b)    c) d) | **1** |
| 16 | The upper limit of the median class is   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | CI | 40- 45 | 45 - 50 | 50 - 55 | 55 - 60 | 60 - 65 | 65 - 70 | 70 - 75 | | Frequency | 2 | 3 | 8 | 6 | 6 | 3 | 2 |   a)55    b)60       c)65 d)70 | **1** |
| 17 | A solid right circular cylinder is cutting to 2 parts at the middle of its height by a plane parallel to its base . The ratio of the volume of smaller cylinder to the whole cylinder is  a)1:2     b)1:4   c) 2:1 d)1:6 | **1** |
| 18 | If the mode and mean of the given frequency distribution are 80 and 110 respectively , then the median is  a)100     b)200  c)300 d)90 | **1** |
| 19 | **Assertion(A)** : The value of y is 3, if the distance between the points P(2, -3) and Q(10, y) is 10.  **Reason (R**): Distance between two points is given by  (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (  b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).  (c) Assertion (A) is true but Reason (R) is false.  (d) Assertion (A) is false but Reason (R) is true. | **1** |
| 20 | **Assertion(A)** : is an irrational number where p is a prime number.  **Reason( R**): Square root of any prime number is an irrational number  a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (  b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).  (c) Assertion (A) is true but Reason (R) is false.  (d) Assertion (A) is false but Reason (R) is true. | **1** |
|  | **SECTION-B** |  |
|  | **Section B consists of 5 questions of 2 marks each** |  |
| 21 | Solve for x and y  3x – 5y – 4 =0 and 9x = 2y + 7 | **2** |
| 22 | S and T are points on sides PR and QR of such that P = Show that ~    **OR**  Two chords AB and CD intersect each other at a point P . Prove that ~ | **2** |
| 23 | AB and AC are tangents to a circle with center O such that 400 Find the measure of | **2** |
| 24 | For A = 300 , verify that cos3A = 4cos3A - 3cosA | **2** |
| 25 | In the given figure,‘O’ is the centre of the circle of radius 14cm . The area of the sector OAPB is 154cm2. Find ‘x’    **OR**  In a circle of radius 14cm an arc subtends an angle of 600 at the centre. find the length of the arc | **2** |
|  | **SECTION-C** |  |
|  | **Section C consists of 6 questions of 3 marks each** |  |
| 26 | Prove that is irrational**.** | **3** |
| 27 | Find the zeroes of the polynomial 2x2 – 2x – 12 and verify the relationship between the zeroes and its coefficients. | **3** |
| 28 | The sum of numerator and denominator of a fraction is equal to 7. Four times the numerator is less than 5 times the denominator by 8. Find the fraction.  **OR**  7 audio cassettes and 3 video cassettes cost Rs 1110 and 5 audio cassettes and 4 video cassettes costs Rs 1350. Find the cost of an audio and Video cassettes. | **3** |
| 29 | Prove that the tangents drawn at the end of a diameter of a circle are parallel | **3** |
| 30 | Prove that  = Sec + tan  OR  Tan2A - Tan2B = | **3** |
| 31 | All jacks, queens and Kings are removed from deck of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at random Giving ace a value 1 and similar value for other cards. Find the probability that the drawn card has a value  a) 7 b) Greater than 7 c) getting a red queen | **3** |
|  | **SECTION-D** |  |
|  | **Section D consists of 4 questions of 5 marks each** |  |
| 32 | Ravi and Kishore together have 45 marbles. Both of them lost five marbles each, and the product of the number of marbles they have is 124 .Find out how many marbles they had to start with?  **OR**  A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production of each article in rupees was 3 more than twice the number of articles produced. On that day, if the total cost of production on the day was Rs 90 , find the number of articles produced and the cost of each article | **5** |
| 33 | a)Prove that if a line is drawn parallel to one side of a triangle to intercept, other two sides are divided in the same ratio  b)In the given figure , find EC. | **5** |
| 34 | From a solid cylinder whose height is 2.4 cm and diameter is 1.4 cm ,a conical cavity of same height and same diameter is hollowed out. Find the Total surface area of the remaining Solid to the nearest cm2.  **OR**  A pen stand made of wood is in the shape of a cuboid with 4 conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10cm by 3.5 cm .The radius of each of depression is 0.5 cm and the depth is 1.4 cm. Find the volume of the wood in the entire stand. | **5** |
| 35 | The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs 18 find the missing frequency f   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Daily pocket allowance | 11-13 | 13-15 | 15-17 | 17-19 | 19-21 | 21-23 | 23-25 | | No of children | 7 | 6 | 9 | 13 | f | 5 | 4 | | **5** |
|  | **SECTION-E** |  |
|  | **Section E consists of 3 case study based questions.** |  |
| 36 | .Anuj gets pocket money from his father everyday. Out of the pocket money, he saves Rs 2.75 on first day, Rs 3 on second day, Rs 3.25 on third day and so on. On the basis of above information, answer the following questions .  https://cbse.qb365.in/elfinder/Uploads/10%20cbse%20mat/2-Arithmetic%20Progressions/cbse-10th-maths-case%20study-chap5-4.jpg  i) What is the amount saved by Anju on 4th day?  ii) On which day he saves Rs. 10 ?  iii) What is the total amount saved by him in the month of Jun if he starts saving from 1st Jun.  **OR**  On which day, he saves ten times as much as he saved on day1 ? | **4** |
| 37 | Alia and Shagun are friends living on the same street in Patel Nagar. Shaguns house is at the intersection of one street with another street on which there is a library. They both study in the same school and that is not far from Shagun's house. Suppose the school is situated at the point 0, i.e., the origin, Alia's house is at A. Shaguns house is at B and library is at C. Based on the above information, answer the following questions.  https://cbse.qb365.in/elfinder/Uploads/10%20cbse%20mat/7-Coordinate%20Geometry/cbse-10th-maths-case%20Study-chap7-2.jpg i) Write the coordinates of point B(Shagun’s house)  ii) Find the coordinates of midpoint of the line segment joining the points A and  iii) How far is the school from Alia's house and Shagun’s house?  **OR**  How far is the library from Alia's house and Shagun’s house | **4** |
| 38 | A boy is standing on the top of light house. He observed that boat P and boat Q are approaching to light house from opposite directions. He finds that angle of depression of boat P is 45° and angle of depression of boat Q is 30°. He also knows that height of the light house is 100 m.  https://cbse.qb365.in/elfinder/Uploads/10%20cbse%20mat/5-Some%20Applications%20of%20Trigonometry/case%20study/cbse-10th-maths-case%20Study-chap9-7.jpg  i) Find measure of  angle ACD . Justify.  ii). Find the distance of boat P from the foot of light house.  iii) Calculate the distance between the two boats.  **OR**  Find the distance of boat Q from the boy. | **4** |

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