

**2020-21**  
**X- MATHEMATICS - PAPER -I**  
**MODEL PAPER-1, E/M**

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CLASS-X      PART: A & B      MAX, MARKS: 80      TIME: 3.15 Hrs

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PART – A

Time: 3.15 Hrs, (Marks: 60)

Instructions:

1. Answer the questions under the Part-A on a separate answer book.
2. Write the answers to the questions under Part-B on the question paper itself and attach it to the answer book of PART-A

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SECTIONS: I (6x2=12Marks)

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Instruction:

1. Answer any six questions choosing three from each of the following two groups, I.e., A and B.
2. Each question carries two marks.

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Group - A

- 1) If  $2^{x+1} = 3^{1-x}$  then find the value of 'x' ?
- 2) If  $P(x) = x^3 - 8$ , find the value of  $P(1)$ ,  $P(0)$ ,  $P(2)$  ?
- 3) Find two numbers whose sum is 27 and product is 182 ?
- 4) Check whether, 301 is a term of the A.P: 5,11,17,23 .....?
- 5) If  $A = \{1,2,3\}$  and  $B = \{3,4,5\}$  then show  $(A \cap B)$  as Venn diagram ?
- 6) Formulate pair of Linear Equation in two variables  
3 pens and 4 books together cost Rs. 50, whereas 5 pens and 3 books together cost Rs. 54 ?

Group – B

7. Draw a circle and two lines parallel to a given line such that one is a tangent and other a secant to the circle ?
8. If  $3 \tan A = 4$  then find  $\sin A$  and  $\cos A$  ?
9. Write the formula for mode for a grouped data, Explain the symbols in words ?
10. Find the Surface area of a sphere of radius 2.1cm ?

- 11. A dice is thrown once find the probability of getting a composite number?
- 12.  $\Delta ABC \sim \Delta DEF$  and their areas are respectively  $64\text{cm}^2$ ,  $121\text{cm}^2$ . If  $EF = 15.4\text{cm}$  find  $BC$  ?

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SECTIONS II (4x4=16 Marks)  
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Instruction:

- 1. Answer any four of the following eight questions.
- 2. Each question carries four marks.

- .....
- 13) Check whether the given pair of equations represent intersecting or parallel or coincident, find the solution if the equations are consistent ?

$$2x+y-5=0$$

$$3x-2y-4=0$$

- 14) How many two-digit numbers are divisible by '3' ?
- 15) Solve  $2x^2-5x+3=0$
- 16) Find the zeros of the quadratic polynomial  $x^2-6x+9$  and verify the relationship between the zeros and co-efficient ?
- 17) A medicine capsule is in the shape of cylinder with two hemispheres stuck to each of its ends the lengths of the capsule is 14mm and the width is 5mm. Find its surface area ?
- 18) Prove that  $(\sin A + \csc A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$
- 19) A box contains 3 blue, 2 white and 4 red marbles. If a marble is drawn at random from the box what is the probability that it will be 1) white 2) blue 3) red

- 20) Consider the following distribution of daily wages of 50 workers of a factory

Daily wages in Rupees	200-250	250-300	300-350	350-400	400-450
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory by using an appropriate method.

SECTIONS III (4x8=32 Marks)

Instruction:

1. Answer of any four questions choosing two from each of the following two grounds i.e., A and B.
2. Each question carries eight marks.

**Group - A**

- 21) Draw the graph of  $P(x)=x^2-3x-4$  and find zeroes. Verify the zeros of the polynomial ?
- 22) Prove the  $\sqrt{2} + \sqrt{3}$  is irrational by the method of contradiction?
- 23) If the sum of first 7 terms of an A.P is 289 find the sum of first 'n' terms?
- 24) Find the coordinates of the points of trisection of the line segment joining the points (2, -6) and (-4, 8)

**Group - B**

- 25) Draw a circle of radius 6cm from a point 10cm away from its centre, construct the pair of tangents to the circle and measure their lengths verify by using Pythagoras theorem ?
- 26) A heap of rice in the form of a cone of diameter 12m and height 8m find the volume? How much canvas cloth is required to cover the heap? ( $\pi=3.14$ )
- 27) If the median of 60 observations given below is 28.5 then find the values of 'x' and 'y'

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	x	20	15	y	5

- 28) Two men on either side of a temple of 30 meter height observe its top at the angles of elevation  $30^\circ$  and  $60^\circ$  respectively. Find the distance between the two men.

**PART - B**  
**BIT PAPER**

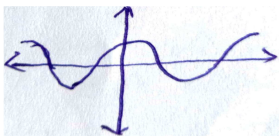
Time : 30 Min

(20x1=20 Marks)

Instruction:

1. Answer the all questions.
2. Each question carries one mark.
3. Answer are to be written in the question paper only.
4. Marks will not be given for over – writing, re-writing or erased answers.
5. Write a letters (a,b,c,d) showing the correct answer for the following questions in the brackets against them. .

- 1) Which of the following rational number is terminating [ ]  
(a)  $\frac{2}{3}$  (b)  $\frac{8}{9}$  (c)  $\frac{3}{8}$  (d)  $\frac{1}{7}$
- 2) A polynomial of degree 3 is called \_\_\_\_\_ polynomial [ ]  
(a) Zero (b) Quadratic (c) Cubic (d) None
- 3) If  $2x+3y=8$  and  $4x+py=16$  has infinite solutions then P [ ]  
(a) 8 (b) 6 (c) 10 (d) 16
- 4) Common difference in A.P  $1/2, 1, 3/2 =$  \_\_\_\_\_ [ ]  
(a)  $\frac{-1}{2}$  (b)  $\frac{1}{2}$  (c) 2 (d) -2
- 5) Discriminate of  $ax^2+bx+c=0$  \_\_\_\_\_ [ ]  
(a)  $b^2-4ac$  (b)  $\sqrt{b^2 - 4ac}$  (c)  $\sqrt{b^2 + 4ac}$  (d) None
- 6)  $A= \{1,2,3,4,5,6\}$   $B= \{2,4,6\}$  then [ ]  
(a)  $B \in A$  (b)  $A \in B$  (c)  $B \subset A$  (d)  $A \subset B$
- 7) Find the slope of A(0,4) and B(4,0) [ ]  
(a) 1 (b) -1 (c) -4 (d) 4
- 8) If slope of a line is '1' then the angle between the line and x-axis is [ ]  
(a)  $45^\circ$  (b)  $30^\circ$  (c)  $60^\circ$  (d)  $90^\circ$

- 9) A line which intersects the given circle at two distinct points is called a \_\_\_\_\_ [    ]  
(a) Tangent    (b) Secant    (c) circle    (d) centre
- 10) Volume of the cuboid \_\_\_ cu units [    ]  
(a)  $l^2b$     (b)  $lbh^2$     (c)  $lbh$     (d) none
- 11) Which of the following is not defined [    ]  
(a)  $\sin 90^\circ$     (b)  $\cos 0^\circ$     (c)  $\sec 90^\circ$     (d)  $\cos 90^\circ$
- 12) If a pole 6m high casts a shadow  $2\sqrt{3}$ m long on the ground then the sun's angle of elevation is [    ]  
(a)  $60^\circ$     (b)  $45^\circ$     (c)  $30^\circ$     (d)  $90^\circ$
- 13) If  $P(E)=0.23$  then  $p(\bar{E}) =$  \_\_\_\_\_ [    ]  
(a) 77%    (b) 23%    (c) 46%    (d) None
- 14) 3,2,4,3,5,2,x,6 if the mode of this data is 3, then  $x=$  \_\_\_\_\_ [    ]  
(a) 4    (b) 3    (c) 2    (d) 5
- 15) Range of first 7 prime numbers is [    ]  
(a) 10    (b) 7    (c) 15    (d) 17
- 16) When three identical coins are tossed simultaneously then the number of total possible outcomes is [    ]  
(a) 2    (b) 4    (c) 6    (d) 8
- 17) The formula used to find total surface area of a cone is [    ]  
(a)  $\pi r$     (b)  $\pi(r+l)$     (c)  $\pi r(l+r)$     (d)  $\pi r^2(l+r)$
- 18) If  $\log_2 1/32 = x$ , then  $x =$  [    ]  
(a) 16    (b)  $1/16$     (c) 5    (d) -5
- 19) If 'D' is the set of letters of the words "COMMERCIALISATION" then  $n(D) =$  \_\_\_\_\_ [    ]  
(a) 10    (b) 11    (c) 12    (d) 13
- 20)  From the given graph of polynomial  $P(x)$ , the number of zeroes of  $P(x)$  [    ]  
(a) 16    (b) 4    (c) 5    (d) 6