2020-21
X– MATHEMATICS - PAPER –1
MODEL PAPER-3, E/M

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

PART – A

SECTIONS: I (6x2=12Marks)

Group - A

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1) Using Euclidean algorithm, find the H.C.F. of 765 and 65 ?

2) If A= {x: x is a prime factor of 210}

   B= {x: x is an odd natural number less than 10}

   Then draw Venn diagram for A U B ?

3) Check whether -3 and 3 are the zeroes of the polynomial x^2-9 ?

4) Find the nature of the roots the Quadratic equation $2x^2-6x+3=0$?

5) For what value of 'P' the following pair of equation has a unique solution 2x+py = -5 and 3x+3y = -6 ?

6) Find the centroid of the triangle with vertices: (6,2) (0,0) and (4, -7)

Group – B

7. Write the formula of mean and Explain the terms in it ?

8. If $\tan\theta+\cot\theta= 2$, find the value of $\tan^2\theta + \operatorname{cosec}^2\theta$?

9. Find the median of $\cos0^0$, $\sin30^0$, $\cos45^0$, $\tan60^0$, $\cot90^0$?

10. Find the Volume of right circular cone with radius 6cm and height 7cm ?

11. When two dice are rolled at a time find the probability of getting the numbers on top face whose product is '6' ?

12. Draw a circle with 5 cm radius and construct a pair of tangents to the circle ?

SECTIONS II (4x4=16 Marks)

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13) The following distribution gives the daily income of 50 workers of a factory ?

Daily Income	250-300	300-350	350-400	400-450	450-500
No. of works	12	14	8	6	10

Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive ?

14) A bag contains 5 Red and 8 white balls, if a ball is drawn at random from the bag what is the probability that it will be
1) White ball 2) not a white ball ?

15) It is right t say that sin (A+B) = sin A + sin B ? Justify your answer ?

16) A sphere, a cylinder and a cone are of the same radius and same height, find the ratio of their curved surface areas ?

17) Find the zeros of x^2-5x+6 and check the relation between co-efficient of polynomial and zeros of polynomial ?

18) Find the discernment of the equation $3x^2-2x+1/3=0$ and hence find the nature of roots and find them ?

19) Find the 20^{th} term from the end of the A.P.: 3,8,13,..... 253 ?

20) 5 Pencils and 7 pens together cost Rs. 50 whereas 7 pencils and 5 pens together cost Rs. 46 find the cost of one pencil and that of one pen ?

SECTIONS III (4x8=32 Marks)

Group - A

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21) Show that the points (1,7) (4,2), (-1, -1) and (-4, 4) are the vertices of a square ?

22) For what value of n are the n^{th} terms of two A.P.S: 63, 65, 67,..... and 3,10,17 ..... equal ?

23) Prove that $\sqrt{3} + \sqrt{5}$ is an irrational number ?

24) Draw the graph $P(x) = x^2-x-2$ and find zeros verify the zeros of the polynomial ?

Group - B

25) The distribution below gives the weights of 30 students of a class find the median?

Weight (Kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of Students	2	3	8	6	6	3	2

26) The angle of elevation of a jet plane from a point A on the ground is 60^0. After a flight of 15 seconds the angle of elevation changes to 30^0. If the jet plane is flying at a constant height of 1500 $\sqrt{3}$ meter, find the speed of the jet plane ($\sqrt{3}$ = 1.732) ?

27) A toy is the form of a cone mounted on a hemisphere of the same diameter. The diameter of the base and the height of the cone are 6cm, 4cm respectively determine the surface area of the toy ?

28) Prove that the tangents to a circle at the end points of a diameter are equal ?

PART - B

BIT PAPER

Time : 30 Min (20x1=20 Marks)

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1) The prime factorization of 216 is ? [ ]

(a) 2^2X3^2 (b) 2^3X3^2 (c) 2^3X3^3 (d) 2^4X3

2) Sum of the zeros of $x^2+7x+10$ is ____ [ ]

(a) 7 (b) -3 (c) 4 (d) None

3) Which of the following numbers is a solution for the equation

$2(x+3) = 18$ [ ]

(a) 5 (b) 6 (c) 13 (d) 21

4) If x-1, x+3, 3x-1 are in A.P. then x= [ ]

(a) 5 (b) 8 (c) 6 (d) 4

5) The degree of any quadratic equation is [ ]

(a) 4 (b) 1 (c) 2 (d) 3

6) An object of set is called [ ]

(a) Subject (b) Number (c) Alphabet (d) Element

7) Slope of the line y = mx is [ ]

(a) y (b) x (c) m (d) None

8) Which of the following are the sides of a right triangle [ ]

(a) 10cm, 8cm, 6cm (b) 12cm, 1cm, 9cm

(c) 3cm, 5cm, 12cm (d) all

9) The number of parallel tangents to a circle with a given tangent is [ ]

(a) 1 (b) 2 (c) 3 (d) 4

10) Foot ball is an Example of [ ]

(a) circle (b) sphere (c) cone (d) none

11) The maximum value of sinθ is ? [ ]

(b) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) 1 (d) $\frac{1}{\sqrt{2}}$

12) If the angle of elevation of sun increases from 0^0 to 90^0 then the length of shadow of the tower [ ]

(a) No change (b) increase (c) decreases (d) can't be decided

13) Which one of the following cannot be the probability of an event [ ]

(a) $\frac{2}{3}$ (b) $\frac{4}{5}$ (c) 0.7 (d) $\frac{5}{4}$

14) P(E) = 0.82 then P($\bar{E}$) = [ ]

(a) 0.8 (b) 0.28 (c) 0.38 (d) 0.18

15) The 25 observation are arranged in ascending order then find what is the median [ ]

(a) 12 (b) 13 (c) 14 (d) 15

16) $\frac{1-\text{Tan}^2 45^0}{1+\text{Tan}^2 45^0}$ = --------- [ ]

(a) 1 (b) 0 (c) -1 (d) 8

17) In Δ ABC $AC^2 = AB^2+BC^2$ then $\angle B$= _____ [ ]

(a) 60^0 (b) 90^0 (c) 36^0 (d) 100^0

18) Number of Diameter of a circle is = [ ]

(a) 2 (b) 5 (c) 6 (d) infinite

19) No of prime factors of 24 _____ [ ]

(a) 6 (b) 8 (c) 4 (d) 1

20) $\text{Log}^1{}_{2021}$ = _____ [ ]

(a) 2 (b) 0 (c) 1 (d) 5