

**Dwarka International School**  
**Subject: Mathematics**  
**CLASS – X ( 2019-20) sample paper**  
**( MID-TERM )**

**TIME: 3 HOURS**

**M.M:80**

**General Instruction:**

- (i) All questions are compulsory.
- (ii) The question paper consists of 40 questions divided into 4 – sections A ,B ,C & D.
- (iii) Section A consists of 20 questions of 1 mark each. Section B consists of 6 questions of 2 marks each, Section C consists of 8 questions of 3 marks each & Section D consists of 6 questions of 4 marks each.

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**SECTION –A**

Q1 Without actually performing the long division After how many place  $\frac{459}{500}$  will terminates

Q2 Find the quadratic polynomial whose zeros are  $-2\sqrt{3}$  and  $-\frac{\sqrt{3}}{2}$ .

Q3 If quadratic equation  $kx^2 + 2x + k = 0$  has two equal roots , then find the value of K.

Q4 The probability of getting bad egg in lot of 400 is 0.035. What is the number of bad eggs in the lot?

Q5 A ladder leaning against a wall an angle of  $60^\circ$  with the horizontal . if the footy of the ladder is 2.5m away from wall , find the length of the ladder.

Q6 What is the class mark of the interval 20 - 30.

Q7 check whether  $8x^7x^6x^5 + 6x^5$  is composite or not? Give reason.

Q8) If the areas of two similar triangles are in ratio 25 : 64, write the ratio of their corresponding sides.

Q9) Is the triangle with sides 14cm, 12cm and 17cm a right triangle? Why?

Q10) Find the distance between the points (3, -5) and (2, 6).

Q11) The smallest number by which  $\sqrt{27}$  should be multiplied so to get a rational number is :

- a)  $\sqrt{27}$                       b)  $3\sqrt{3}$                       c)  $\sqrt{3}$                       d) 3

Q12) If one root of the polynomial  $f(x) = 5x^2 + 13x + k$  is reciprocal of the other , then the value of k is :

- a) 0                              b) 5                              c)  $\frac{1}{6}$                               d) 6

Q13) The value of k for which the system of equations  $2x + 3y = 5$  ,  $4x + ky = 10$  has infinite number of solution is

- a) 1                      b) 3                      c) 6                      d) none of these

Q14 The area of triangle formed by lines  $x=3$  ,  $y=4$  and  $x=y$  is

- a) 0.5 sq units      b) 1 sq units      c) 2 sq units      d) none of these

Q15) If 2 is root of the equation  $x^2 + bx + 12 = 0$  and the equation  $x^2 + bx + q = 0$  , then q=

- a) 8                      b) -8                      c) 16                      d) -16

Q16) The probability of a leap year selected at random contain 53 Sunday is:

- (a)  $\frac{53}{366}$                       (b)  $\frac{1}{7}$                       (c)  $\frac{2}{7}$                       (d)  $\frac{53}{365}$

Q17) The probability that a prime number selected at random from the numbers (1,2,3, .....35) is :

- (a)  $\frac{12}{35}$                       (b)  $\frac{11}{35}$                       (c)  $\frac{13}{35}$                       (d) none of the

Q18) Find the distance of the point  $(-6, 8)$  from the origin.

- (a) 8                      (b) 11                      (c) 10                      (d) 9

Q19) The vertices of a  $\Delta ABC$  and given by  $A(2, 3)$  and  $B(-2, 1)$  and its centroid is  $G\left(1, \frac{2}{3}\right)$ .

Find the coordinates of the third vertex C of the  $\Delta ABC$ .

- (a)  $(0, 2)$                       (b)  $(1, -2)$                       (c)  $(2, -3)$                       (d)  $(-2, 3)$

Q20) If  $x=a, y=b$  is the solution of the pair of equation  $x-y=2$  and  $x+y=4$  then what will be value of a and b

- (a) 2,1                      (b) 3,1                      (c) 4,6                      (d) 1,2

### SECTION –B

Q21) Find the H.C.F and L.C.M of 120 and 144 by using fundamental theorem of arithmetic

Q22) show that the points  $(a,a)$  ,  $(-a, -a)$  and  $(-\sqrt{3}a, \sqrt{3}a)$  are the vertices of an equilateral triangle .

Q23) Find the value of K for which the following system of equation has infinite number of solution :

$$x + (k + 1)y = 5$$

$$(k + 1) + 9y = 8k - 1$$

Q24) In  $\Delta ABC$ , if AD is the median , show that  $AB^2 + AC^2 = 2[AD^2 + BD^2]$

Q25)If  $\sin(2A + 45) = \cos(30 - 45)$  and  $0 < A < 90$ . Find the value of A.

Q26) If the mean of the following data is 20.6 ,find the value of p

X	10	15	P	25	35
F	3	10	25	7	5

### SECTION –C

Q26) Prove that square of any positive integer is of the form  $4m$  or  $4m+1$  for some integer  $m$ .

Q27)Solve:  $\frac{4}{x} - 3 = \frac{5}{2x+3}$

Q28)What should be subtracted from  $p(x) = x^5 + 4x^3 + 2x - 7$  so that the resulting polynomial is exactly divisible by  $x^2 + x + 1$

Q29)If  $A(-3 ,5)$  , $B(-2 ,-7)$  ,  $C(1 , -8)$  and  $D(6 ,3)$  are the vertices of a quadrilateral ABCD, find its area

Q30)A motor boat takes 6 hours to cover 100km downstream and 30km upstream .If the boat goes 75km downstream and returns back to the starting point in 8 hours , find the speed of the boat in the still water and the speed of the stream.

Q31)Evaluate :  $\frac{\sin 39}{\cos 51} + 2 \tan 11 \tan 31 \tan 59 \tan 79 - 3(\sin^2 21 - \sin^2 69)$

Q32)If O is any point inside a rectangle ABCD. Prove that  $OB^2+OD^2=OA^2+OC^2$

Q33)The following table gives the distribution of the lifetime of 400 neon lamp , find the median lifetime of a lamp.

Lifetime (in hours)	Number of lamps
1500-2000	14
2000-2500	56
2500-3000	60
3000-3500	86
3500-4000	74
4000-4500	62
4500-5000	48

### SECTION –D

Q34) If it is given that  $\sqrt{3}$  and  $-\sqrt{3}$  are two zeroes of the polynomial  $f(x) = 3x^4 - 8x^3 - 12x^2 + 24x + 9$  , find other zeroes .

Q35) Prove that :  $\frac{1+\cos\theta-\sin\theta}{\cos\theta-1+\sin\theta} = \operatorname{cosec}\theta + \cot\theta = \frac{1+\cos\theta}{\sin\theta}$

Q36)In a game , the entry fee is rupees 5 . The game consist of tossing a coins 3 times . If one or two heads shown ,sweta get her entry fee back .If she shows three heads , she

receives double the entry fees. Otherwise she will lose, after tossing a coin three times , find the probability that she

- I) Loses the entry fee
- II) Gets double fee
- III) Just get her entry fee

Q37) From the top of a 60m high building the angle of depression of the top and the bottom of a tower are  $45^\circ$  and  $60^\circ$  respectively . Find the height of the tower.

Q39) The age of father is equal the square of the age of his son . The sum of the age of father and five times the age of son is 66 years. Find their ages .

Q40) Draw 'less than ' and 'more then' ogive for the following and hence find the median.

Class	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	10	8	12	24	6	25	15