# CITY SCHOOL OF EDUCATIONAL INSTITUTE, PANDHURNA
## OPEN BOOK EXAMINATION 2020-21
### Class-9th
### Subject- Mathematics

Time – 3 hour Max. Mark– 100

**General Instructions:-**

**1. All questions are compulsory.**
**2. Section A contains objective type questions.Q.1 carries 5 marks, Q.2 carries 10 marks and Q.3 carries 5 marks.**
**3. Section B is from Q.4 to Q.13, each carries 2 marks.**
**4. Section C is from Q.14 to Q.23, each carries 3marks.**
**5. Section D is from Q.24 to Q.28, each carries 6 marks.**

## SECTION A

**Q.1-Choose the correct answer-**

1.) Every rational number is:
a. Whole number b. Natural number
c. Integer d. Real number

2.) The degree of 4x3-12x2+3x+9 is
a. 0 b. 1
c. 2 d. 3

3.) The linear equation 3x-11y=10 has:
a. Unique solution b. Two solutions
c. Infinitely many solutions d.No solutions.

4) The shape of the base of a Pyramid is:
a. Triangle b. Square
c. Rectangle d. Any polygon

5) The sum of all the angles of a quadrilateral is equal to:
a. 180° b. 270°
c. 360° d. 90°

**Q.2-True or False-**

- Every natural number is a whole number.
- If equals are added to equals, the wholes are not equal.
- Every integer is a whole number.
- 0.6 can be written as 3/5.
- Every rational number is a whole number.
- The coefficient of $3x^2$ is 2.
- Dividend = (Divisor * Quotient) + Remainder.
- (x+2) is a factor of $x^3+3x^2+5x+6$
- Every irrational number is a real number.
- The whole is greater than the part.

**Q.3-Fill in the blanks-**

- Find the value of $525^2 - 475^2$ = _____.
- x2-2x+1 is a polynomial in:_____.
- The solution of equation x-2y = 4 is_____.
- A solid has _____dimensions.
- A point has _____ dimension.

## SECTION B

**Q.4-**Find six rational numbers between 3 and 4.
**Q.5-**Find the value of the polynomial at
(i) x = 0 (ii) x = −1
**Q.6-** Write the answer of each of the following questions:
(i) What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane?
(ii) What is the name of each part of the plane formed by these two lines?

**Q.7**-Express the following linear equations in the form ax + by + c = 0 and indicate the values of a, b, c in each case:

(i) x = 3y (ii) 2x = − 5y

**Q.8**-Write the degree of each of the following polynomials-

a) $5x^3+4x^2+7x$ b) $4-y^2$

**Q.9**- Find the value of the polynomial $5x-4x^2+3$ at x= -1.

**Q.10**-a) What is the name of each part of the plane formed by horizontal and vertical lines?

b) Write the name of the point where these two lines intersect.

**Q.11**-Write two solutions for 2x + y= 7.

**Q.12**-Write any two postulates from the Euclid's five postulate.

**Q.13**- Find the remainder when x3 + 3x2 + 3x + 1 is divided by

(i) x + 1 (ii) x

## SECTION C

**Q.14**- Find the value of k, if x = 2, y = 1 is a solution of the equation 2x + 3y = k. .

**Q.15**-ABC is a right angled triangle in which A = 90º and AB = AC. Find B and C.

**Q.16**-Evaluate using suitable identities:

a) $(104)^3$ b) $(999)^3$

**Q.17**- Factorise:

a) $12x^2-7x+1$ b) $2x^2+7x+3$

**Q.18**-In which quadrant or on which axis do each of the points(-2,4),(3,-1),(-1,0),(1,2) and (-3,-5) lie? Verify your answer by locating them on the Cartesian plane.

OR

Verify whether -1, 2 and 0 are zeroes of the polynomial $x^2-2x$.

**Q.19**- Factorise $8x^3+27y^3+36x^2y+54xy^2$.

**Q.20**- Find:

a) $64^{1/2}$ b) $32^{2/5}$ c)$2^{2/3}.2^{1/5}$

**Q.21**Plot the points (x,y)given in the following table on the plane, choosing suitable units of distances on the axes.

| | | | | | |
|---|---|---|---|---|---|
| X | -2 | -1 | 0 | 1 | 3 |
| Y | 8 | 7 | -1.25 | 3 | -1 |

**Q.22**-If a point C lies between two points A and B such that AC=BC, then prove that AC= ½ AB. Explain by drawing the figure.

**Q.23**- Define: a) Square b) line segment c) Rational number

## SECTION D

**Q.24** -Give a definition for each of the following terms. Are there other terms that need to be defined first? What are they, and how might you define them?
(i) parallel lines (ii) perpendicular lines (iii) line segment (iv) radius of a circle (v) square Answer:

**Q.25** -Yamini and Fatima, two students of Class IX of a school, together contributed Rs 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs x and Rs y.) Draw the graph of the same..

**Q.26**-Find P(0),P(1)&P(2) for each of the following polynomials.

a) $P(y) = y^2-y+1$ b) P(x) = (x-1) (x+1)

**Q.27**-Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.

**Q.28**- The taxi fare in a city is as follows: For the first kilometre, the fares is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.