



RISE OF NATION ACADEMY

"We Create the Impeccable Creature"

Test Paper

Standard – IX

Subject – Mathematics

Date – 20/10/2019

Time – 3 hrs.

Max. Marks - 80

Min. Marks – 40

1 Marks Questions:

Q.1 The number of consecutive zeroes in $2^3 \times 3^4 \times 5^4 \times 7$, is

- (i) 3 (ii) 2 (iii) 4 (iv) 5

Q.2 If $x + 2$ is a factor of $x^2 - mx + 14$, then $m =$

- (i) 7 (ii) 2 (iii) 9 (iv) 14

Q.3 In a $\triangle ABC$, if $\angle A = 60^\circ$, $\angle B = 80^\circ$ and the bisector of $\angle B$ and $\angle C$ meet at O , then $\angle BOC =$

- (i) 60° (ii) 120° (iii) 150° (iv) 30°

Q.4 In an isosceles triangle, if the vertex angle is twice the sum of the base angles, then the measure of vertex angle of the triangle is

- (i) 100° (ii) 120° (iii) 110° (iv) 130°

Q.5 The perpendicular distance of the point $P(4, 3)$ from y – axis is

- (i) 4 (ii) 3 (iii) 5 (iv) none of these

Q.6 The value of $0.\overline{23} + 0.\overline{22}$ is

- (i) $0.\overline{44}$ (ii) $0.\overline{43}$ (iii) $0.\overline{45}$ (iv) 0.45

Q.7 The simplest rationalizing factor of $3\sqrt{500}$ is

- (i) $3\sqrt{2}$ (ii) $3\sqrt{5}$ (iii) $\sqrt{3}$ (iv) none of these

Q.8 if 3 is a factor of polynomial $p(x) = x^3 - 3x^2a - 27$ then value of a is: -

- (i) 0 (ii) 12 (iii) -11 (iv) 13

Q.9 If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} =$

- (i) 0 (ii) 1 (iii) -1 (iv) 3

Q.10 The factors of $x^3 - 7x + 6$ are

- (i) $x(x - 6)(x - 1)$ (ii) $(x^2 - 6)(x - 1)$ (iii) $(x + 1)(x + 2)(x - 3)$
 (iv) $(x - 1)(x + 3)(x - 2)$

Q.11 If $x - a$ is a factor of $x^3 - 3x^2a + 2a^2x + b$, then the value of b is -

- (i) 0 (ii) 2 (iii) 1 (iv) 3

Q.12 If the bisectors of the acute angles of a right triangle meet at O, then the angle at O between the two bisectors is -

- (a) 45° (b) 95° (iii) 135° (iv) 90°

Q.13 In a triangle ABC, if $AB = AC$ and BC is produced to D such that $\angle ACD = 100^\circ$, then $\angle A =$

- (i) 20° (ii) 40° (iii) 60° (iv) 80°

Q.14 The abscissa of any point on y - axis is

- (i) 0 (ii) 1 (iii) -1 (iv) any number

Q.15 The base of an isosceles right triangle is 30 cm. its area is

- (i) $225\sqrt{3} \text{ cm}^2$ (ii) 225 cm^2 (iii) $225\sqrt{2} \text{ cm}^2$ (iv) 450 cm^2

Q.16 The length of each side on an equilateral triangle of area $4\sqrt{3} \text{ cm}^2$, is

- (i) 4 cm (ii) $\frac{4}{\sqrt{3}} \text{ cm}$ (iii) $\frac{\sqrt{3}}{4} \text{ cm}$ (iv) 3 cm

Q.17 The distance between the graph of the equations $y = -1$ and $y = 3$ is

- (i) 2 (ii) 4 (iii) 3 (iv) 1

Q.18 if one angle of a triangle is equal to the some of the other two angles, then the triangle is

- (i) an isosceles triangle (ii) an obtuse angle (iii) an equilateral angle (iv) a right angle

Q.19 Which of the following is not a criterion for congruence of triangles?

- (i) SAS (ii) SSA (iii) ASA (iv) SSS

Q.20 The distance of the point P (4, 3) from the origin is

- (i) 4 (ii) 3 (iii) 5 (iv) 7

2 Marks Questions:

Q.21 Prove that: $\frac{a^{-1}}{a^{-1}+b^{-1}} + \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{2b^2}{b^2-a^2}$.

Q.22 If $x = 2k - 1$ and $y = k$ is a solution of the equation $3x - 5y - 7 = 0$, find the value of k.

Q.23 If the point (3, 4) lies on the graph of the equation $3y = ax + 7$, find the value of a.

Q.24 The value of $\frac{(2.3)^3 - 0.027}{(2.3)^2 + 0.69 + 0.09}$ is?

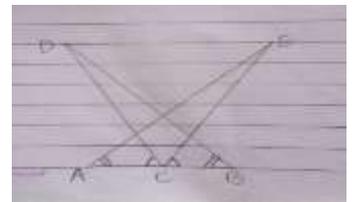
Q.25 Factorize: $p^6 - 512q^6$

Q.26 The perimeter of a triangle is 300 m. If its sides are in the ratio 3 : 5 : 7. Find the area of the triangle.

3 Marks Questions:

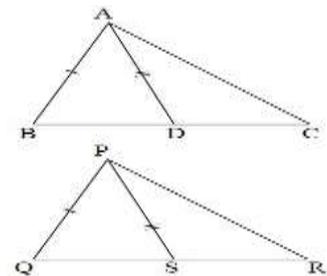
Q.27 Find the value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ when $a + b + c = 3x$.

Q.28 In fig. $AC = BC$, $\angle DCA = \angle ECB$ and $\angle DBC = \angle EAC$. Prove that triangles DBC and EAC are congruent, and hence $DC = EC$ and $BD = AE$.



Q.29 If the bisector of a pair of alternate angles formed by a transversal with two given lines are parallel, prove that the given lines are parallel.

Q.30 In the fig. two sides AB and BC and the median AD of $\triangle ABC$ are equal respectively to the two sides PQ and QR and the median PM of the other triangle PQR . Prove that: (i) $\triangle ABD \cong \triangle PQM$



(ii) $\triangle ABC \cong \triangle PQR$

Q.31 Show that the sum of the three altitudes of a triangle is less than the sum of three sides of the triangle.

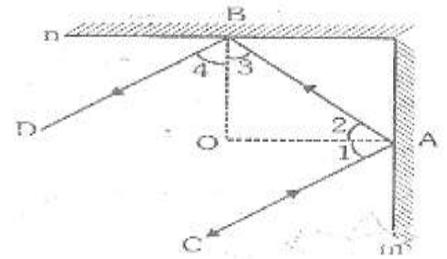
Q.32 Find the percentage increase in the area of a triangles if its each side is doubled.

Q.33 What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$ so that the result is exactly divisible by $2x^2 + x - 1$?

Q.34 If both a and b are rational numbers, find the value of a and b in each of the following qualities: $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$.

4 Marks Questions:

Q.35 In fig. m and n are two plane mirrors perpendicular to each other. Show that the incident ray CA is parallel to the reflected ray BD .



Q.36 In fig. PQRS is a square and SRT is an equilateral triangle. Prove that: (i) $PT = QT$
(ii) $\angle TQR = 15^\circ$

Q.37 If two parallel lines are intersected by a transversal, prove that the bisectors of the two pairs of interior angles enclose a rectangle.

Q.38 If $x^4 + \frac{1}{x^4} = 47$. find the value of $x^3 + \frac{1}{x^3}$.

Q.39 If $\frac{9^n \times 3^2 \times (3^{-\frac{n}{2}})^{-2} - (27)^\circ}{3^{3m} \times 2^3} = \frac{1}{27}$, prove that $m - n = 1$.

Q.40 Prove that the angle between internal bisector of one base angle and the external bisector of the other base angle of a triangle is equal to one-half of the vertical angle.