

HALF YEARLY EXAMINATION, 2017-18

MATHEMATICS

Time : 3 hrs.

Class - IX

M.M. : 80

Date – 23.09.2017 (Saturday)

Name of the student _____ Section _____

General Instructions –

- All questions are **compulsory**.
- The question paper comprises **30 questions** divided into 4 Sections, Section A, B, C & D.
- **Section A** contains **6 questions** of **1 mark** each. **Section B** contains **6 questions** of **2 marks** each. **Section C** contains **10 questions** of **3 marks** each and **Section D** contains **8 questions** of **4 marks** each.
- Use of calculator is **not permitted**.
- **Question number 17 and 26 are to be solved in the graph paper.**

SECTION-A

- Q.1** Write whether following is true or false.
0 is a rational number.
- Q.2** Write the degree of a constant polynomial.
- Q.3** Write the coordinates of the origin.
- Q.4** Write the standard form of a linear equation in two variables.
- Q.5** How many lines can be drawn from two given points ?
- Q.6** Write the probability of impossible event.

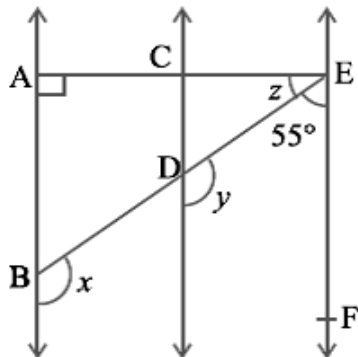
SECTION - B

- Q.7** Find two rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.
- Q.8** If $p(x) = 3x^2 + 7x - 8$, find $p(-2)$.
- Q.9** If the points (3,8) lies on the graph of the equation $4y = 3x - 15a$, find the value of a.
- Q.10** Find the value of p, if $x = 3$ and $y = -2$ is a solution of the equation $2x + 5yp = 7$.
- Q.11** In a cricket match, a batsman hits a boundary 8 times out of 40 balls he plays. Find the probability that he didn't hit a boundary.
- Q.12** A coin is tossed 500 times with the following frequencies of two outcomes:
Head : 240 times ; tail : 260 times
Find the probability of occurrence of each of these events correct to two places of decimal.

SECTION-C

- Q.13** Express : $2.\overline{35}$ in the form of p/q , where p and q are integers and $q \neq 0$.
- Q.14** Represent $\sqrt{5}$ on the number line.
- Q.15** Find the value of k, if $x - 2$ is a factor of $4x^3 + 3x^2 - 4x + k$.
- Q.16** Factorise : $27a^3 + 64b^3$
- Q.17** Plot the points A (5, 0), B (0, 5), C (2, 5), D (5, 2) on the graph paper and write the name of the special type of quadrilateral.

- Q.18** Find the value of k if,
 $2kx - 3y = 20$, where $x = -2$ and $y = 8$
- Q.19** Write any three Euclid's axioms.
- Q.20** A point C lies between two points A and B such that $AC = BC$. Using Euclid's axiom, show that $AC = \frac{1}{2}AB$.
- Q.21** Prove that the sum of all the interior angles of a triangle is 180° .
- Q.22** In the given figure, $AB \parallel CD$ and $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of x , y and z .

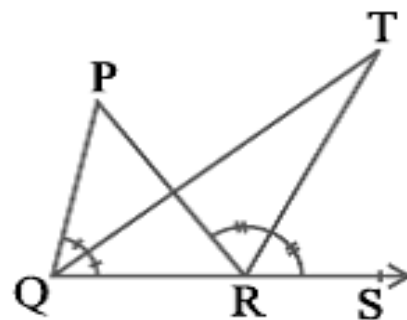


SECTION-D

- Q.23** Varun was facing some difficulty in simplifying $\frac{7+3\sqrt{5}}{3+\sqrt{5}} = a + b\sqrt{5}$. His classmate Priya gave him a clue to rationalise the denominator for simplification. Varun simplified the expression and thanked Priya for this goodwill. How Varun simplified $\frac{7+3\sqrt{5}}{3+\sqrt{5}} = a + b\sqrt{5}$? Solve and write the values of 'a' and 'b' found by Varun.

What value is depicted by the act of Priya?

- Q.24** Prove that: $\left(\frac{x^a}{x^b}\right)^{\frac{1}{ab}} \left(\frac{x^b}{x^c}\right)^{\frac{1}{bc}} \left(\frac{x^c}{x^a}\right)^{\frac{1}{ca}} = 1$.
- Q.25** Evaluate $(102)^3$ by using suitable identity.
- Q.26** Draw the graph of the equation $y - x = 6$.
- Q.27** POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.
- Q.28** In the given figure, the side QR of $\triangle PQR$ is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $\angle QTR = \frac{1}{2}\angle QPR$.



- Q.29** Factorise : $27x^3 + 8y^3 + z^3 - 18xyz$.
- Q.30** In the given figure $PQ \parallel ST$, $\angle PQR = 112^\circ$ and $\angle RST = 127^\circ$, find $\angle QRS$.

