Class X
Periodic Test-I
(2024-25)
Mathematics(Standard)

RIMT WORLD SCHOOL

Date : 19.07.2024 **Roll No:**

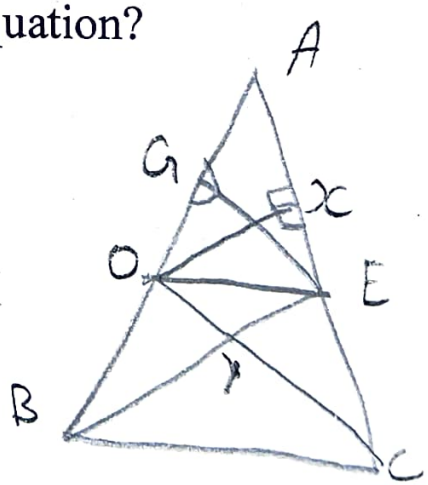
Time : 1 hr 30 min **M.M. : 40**

General Instructions:

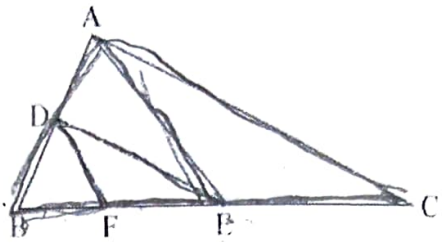
1. **The question paper comprises of five sections: Section A, B, C, D and E.**
2. **Section A: comprises of 8 questions of 1 mark each.**
3. **Section B: comprises of 3 questions of 2 marks each.**
4. **Section C: comprises of 4 questions of 3 marks each.**
5. **Section D: comprises of 2 questions of 5 marks each.**
6. **Section E: comprises of 1 question of 4 marks.**
7. **All questions are compulsory. However, an internal choice in one question of 5 marks, 3 marks and 2 marks has been provided.**

SECTION-A

1. How many zeroes does(x-2)(x+3) have?
   a) Zero b) One c) Two d) Three
2. The pair of equations y = 2 and y = -3 has:
   a) One solution b) Two solutions
   c) Infinitely many solutions d) No solutions
3. Which of the following is a quadratic equation?
   a) $x^2 + 2x + 1 = (4 - x)^2 + 3$
   b) $-2x^2 = (5 - x)\left(2x - \frac{2}{5}\right)$
   c) $(k+1)\,x^2 + \frac{3}{2}x = 7, where\ k = -1$
   d) $x^3 - x^2 = (x - 1)^3$



4. In the given figure below, DE||AC and DF||AE. Which of these is equal to $\frac{BF}{FE}$?



a) $\frac{DF}{AE}$ b) $\frac{BE}{EC}$

c) $\frac{BA}{AC}$ d) $\frac{FE}{EC}$

5. If one of the zeroes of a quadratic polynomial $(k-1)x^2+kx+1$ is -3, then the value of k is:

a) 4/3 b) -4/3

c) 2/3 d)-2/3

6. If 17x-19y=53 and 19x-17y=55, then the value of (x+y) is

a) 1 b) -1

c) 3 d)-3

7. The roots of the equation $\sqrt{3}\,x^2 + 10x + 7\sqrt{3}$ are:

a) $\sqrt{3}, -\sqrt{3}$ b) $\sqrt{3}, \frac{1}{\sqrt{3}}$

c) $-\sqrt{3}, \frac{-7}{\sqrt{3}}$ d) None of these

Assertion-and-Reason Type:

Question-8 consists of two statements: Assertion (A) and Reason (R).For selecting the correct answer use the following code:

a) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).

b) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).

c) Assertion (A) is true and Reason (R) is false.

d) Assertion (A) is false and Reason (R) is true

8. **Assertion(A):**If A and B are respectively the points on the sides PQ and PR of ΔPQR such that PQ=12.5 cm, PA=5 cm, BR=6 cm and PB= 4 cm then, AB||QR.

Reason(R): If a line divides any two sides of a triangle in the same ratio, then the line is parallel to the third side of the triangle.

SECTION-B

9. If one of the zero of the quadratic polynomial $x^2-7x+12$ is 4, find the other zero.

10. Two pipes together can fill a tank in $\frac{15}{8}$ hours. The pipe with larger diameter takes 2 hours less than the pipe with smaller diameter to fill the tank separately, form a quadratic equation for the given situation.

OR

A train covers a distance of 200 km at constant speed. If the speed of the train is increased by 10 km/hr, the journey would have taken 1 hour less, form a quadratic equation for the given situation.

11 Solve the following system of linear equations:

$ax+by=a-b$; $bx-ay=a+b$

SECTION-C

12. If α *and* β are the two zeroes of the polynomial $21y^2-y-2$, find the quadratic polynomial whose zeroes are 2α *and* 2β.

OR

If α and β are the zeroes of the polynomial $6y^2 - 7y + 2$, find a quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$.

13. In a competitive exam, one mark is awarded for each correct answer while ½ mark is deducted for each wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly?

14. Write all the values of p for which the quadratic equation $x^2+px+16=0$ has equal roots. Find the roots of the equation/s so formed.

15. A boy of height 95cm is walking away from base of a lamp post at a speed of 1.5 m/s. If the lamp post is 3.8m above the ground, find the length of his shadow after 5 seconds.

SECTION-D

16. State and prove Basic Proportionality Theorem.
17. A two-digit number is such that the product of its digits is 24. If 18 is subtracted from the number, the digits interchanges their places. Find the number.

OR

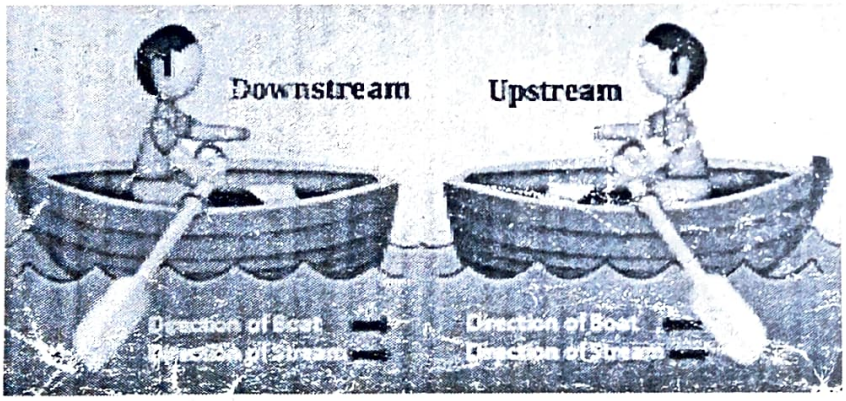
For which values of a and b, will the following pair of linear equations have infinitely many solutions?

$x + 2y = 1;\ (a - b)x + (a + b)y = a + b - 2$

Section-E

18. **Case Study:**

The speed of a motor boat is 20 km/hr. For covering the distance of 15 km the boat took 1 hour more for upstream than downstream. Answer the following:



a) Let the speed of the stream be x km/hr. What will be the speed of the motorboat in upstream then?

b) Write the quadratic equation for the speed of the current.

c) What is the speed of current?