Exam Paper

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Test / Exam Name: QUADRATIC EQUATION
Student Name: ----------

Standard: 10TH
Section: ----------

Subject: MATHEMATICS
Roll No.: ----------

Questions: 25	Time: 60 Mins	Marks: 102

Instructions

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Q1. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in mathematics and 3 marks less in English, the product of her marks would have been 210. Find her marks in two subjects. **5 Marks**

Q2. Two water taps together can fill a tank in $9\frac{3}{8}$ hours. The of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank. **5 Marks**

Q3. Solve the following quadratic equations by factorization: **4 Marks**

$4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0$

Q4. Show that the equation $2(a^2 + b^2)x^2 + 2(a + b)x + 1 = 0$ has no real roots, when $a \neq b$. **4 Marks**

Q5. The sum of the reciprocals of Rehman's ages (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age. **4 Marks**

Q6. A two-digit number is such that the product of the digits is 16. When 54 is subtracted from the number, the digits are interchanged. Find the number. **4 Marks**

Q7. Find two consecutive numbers whose squares have the sum 85. **4 Marks**

Q8. The diagonal of a rectangular field is 60 meters more than the shorter side. If the longer side is 30 meters more than the shorter side, find the sides of the field. **4 Marks**

Q9. The sum of two numbers is 48 and their product is 432. Find the numbers. **4 Marks**

Q10. The speed of a boat in still water is 8km/hr. It can go 15km upstream and 22km downstream in 5 hours. Find the speed of the stream. **4 Marks**

Q11. Two pipes running together can fill a tank in $11\frac{1}{9}$ minutes. If one pipe takes 5 minutes more than the other to fill the tank separately, find the time in which each pipe would fill the tank separately. **4 Marks**

Q12. An airplane take 1 hour less for a journey of 1200km if its speed is increased by 100km/hr from its usual speed. Find its usual speed. **4 Marks**

Q13. A train travels 360km at a uniform speed. If the speed had been 5km/hr more, it would have taken 1 hour less for the same journey. Find the speed of the train. **4 Marks**

Q14. The sum of the squares of three consecutive natural number is 149. Find the numbers. **4 Marks**

Q15. A two-digit number is such that the product of digit is 12. When 36 is added to the number the digits interchange their places. Determine the number. **4 Marks**

Q16. Solve the following quadratic equations by factorization: **4 Marks**

$\frac{3}{x+1} + \frac{4}{x-1} = \frac{29}{4x-1}$, $x \neq -1, -1, \frac{1}{4}$

Q17. Find the value of k for which the root are real and equal in the following equations: **4 Marks**

$(2k + 1)x^2 + 2(k + 3)x + (k + 5) = 0$

Q18. Sum of the area of two squares is $400cm^2$. If the difference of their perimeters is 16cm, find the sides of two squares. **4 Marks**

Q19. The numerator of a fraction is 3 less than the denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and the original fraction is $\frac{29}{20}$. Find the original fraction. **4 Marks**

Q20. An airplane left 50 minutes later than its scheduled time, and in order to reach the destination, 1250km away, in time, it had to increase its speed by 250km/hr from its usual speed. Find its usual speed. **4 Marks**

Q21. Divide 29 into two parts so that the sum of the squares of the parts is 425. **4 Marks**

Q22. The time taken by a person to cover 150km was 2.5 hrs more than the time taken in the return journey. If he returned at a speed of 10km/hr more than the speed of going, what was the speed per hour in each direction? **4 Marks**

Q23. Some students planned a picnic. The budget for food was Rs. 500. But, 5 of them failed to go and thus the cost of food for each member increased by Rs. 5. How many students attended the picnic? **4 Marks**

Q24. At present Asha's age (in years) is 2 more than the square of her daughter Nisha's age. When Nisha grows to her mother's present age, Asha's age would be one year less than 10 times the present age of Nisha. Find the present ages of both Asha and Nisha. **4 Marks**

Q25. A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production on each article (in rupees) was 3 more than twice the number of articles produced on that day. If the total cost of production on that day was Rs. 90, find the number of articles produced and the cost of each article. **4 Marks**