

Udaya Public School, Ayodhya
First Term Examination 2023-24

Class X Subject: Mathematics SET II

Time: 3 Hours

MM: 80

General Instructions

- (i) Section A contains 20 one and each carry 1 mark.
- (ii) Section B contains questions from 21 to 25 and each question carry 2 marks.
- (iii) Section C contains questions from 26 to 31 and each question each carry 3 marks.
- (iv) Section D contains questions from 32 to 35 and each question carry 5 marks.
- (v) Section E Contains case studies questions from Q36 to 38 and question carry 7 marks

Section A (20x1 = 20 marks)

- Q1:** Let $a=p^3q^4$, $b=p^2q^3$ and $HCF(a,b)=p^m q^n$ and $LCM(a,b)=p^r q^s$ then value of $(m+n)(r+s)$ is ____
(a) 15 (b) 30 (c) 35 (d) 70
- Q2:** Product of two numbers is 18144 and their HCF is 6 then their LCM is ____
(a) 3024 (b) 108864 (c) 9072 (d) 6048
- Q3:** Which one of these is irrational ____
(a) 1.15151515..... (b) 1.125 (c) π (d) $3/5$
- Q4:** If a prime m divides 1296 then m also divides ____
(a) 36 (b) 48 (c) 32 (d) 24
- Q5:** Let graph of $y = f(x)$ intersect x - axis at $(-2,0)$, $(0,0)$ and $(2,0)$ then number of zeroes of polynomial $f(x)$ is ____
(a) 0 (b) 1 (c) 2 (d) 3
- Q6:** If α, β are zeroes of polynomial $f(x)=px^2-2x+3p$ such that sum of zeroes is equal to product of zeroes then value of p is :
(a) $-2/3$ (b) $2/3$ (c) $1/3$ (d) $-1/3$
- Q7:** A quadratic polynomial $p(x) = (k-2)^2$ has at most number of zeroes ____.
(a) 0 (b) 1 (c) 2 (d) None of these
- Q8:** A quadratic with zeroes 2 and 3 is ____.
(a) x^2-5x+6 (b) x^2-2x+3 (c) x^2-3x+2 (d) None of these
- Q9:** If the lines $3x+2ky = 2$ and $2x+5y+1=0$ are parallel then values of k is ____.
(a) $-5/4$ (b) $2/5$ (c) $15/4$ (d) $3/2$
- Q10:** Lines $\frac{4}{3}x + 2y - 8 = 0$ and $2x+3y-12=0$ are:
(a) parallel (b) intersecting (c) coincident (d) None of these
- Q11:** The solution of equations of lines x -axis and y axis is:
(a) $(x=0, y=0)$ (b) $(x=1, y=1)$ (c) $(x=-1, y=-1)$ (d) None of these
- Q12:** For what value of k does the system $2x+3y=7$ and $(k-1)x + (k+2)y = 3k$ have infinite solutions:
(a) $1/5$ (b) 7 (c) $1/7$ (d) None of these
- Q13:** If quadratic equation $mx^2 + 2x+m=0$ has two equal roots then value of m is ____
(a) ± 1 (b) 0,2 (c) 0,1 (d) -1,0
- Q14:** If $x=3$ is a root of quadratic equation $7x^2 - (k+1)x+3=0$ then the value of k is :
(a) 7 (b) 14 (c) 21 (d) $7/3$
- Q15:** For what value of p the sum of roots and product of roots of equation $x^2-3x+p=0$ are equal
(a) $p=1$ (b) $p=2$ (c) $p=3$ (d) None of these
- Q16:** Quadratic equation $x^2-10x+25$ has:
(a) real and distinct roots (b) real and equal roots. (c) no real roots (d) None of these..
- Q17:-** Which one is not a quadratic equation.
(a) $x^3-x^2-(x-1)^3 = 0$ (b) $x+1/x=1$ (c) $x(x^2-1)+2x+1=0$ (d) $2(x+1)^2 + 3(x+1)+7=0$
- Q18:** The degree of a polynomial is 3. At most how many zeros does it have:
(a) 0 (b) 1 (c) 2 (d) 3
- Q19:** HCF of two numbers is 9 and their LCM is 22338. If one number is 657 then other number is ____.
(a) 306 (b) 366 (c) 376 (d) None of these
- Q20:** Which pair of numbers are co-prime:
(a) 2 and 4 (b) 8 and 27 (c) 13 and 91 (d) 17 and 51

Section B (5x2 marks = 10 marks)

- Q21:** Show that 6^n can never end with digit 0.
- Q22:** Prove that $11 \times 13 \times 19 + 11 \times 19$ is composite number.
- Q23:** Prove that $3+2\sqrt{5}$ is irrational number.
- Q24:** Find a quadratic polynomial sum of whose zeroes is $\frac{1}{4}$ and product of zeroes is -1.
- Q25:** Solve $\sqrt{2}x + \sqrt{3}y=0$, $\sqrt{3}x - \sqrt{8}y=0$.

Section C (6x3 marks = 18 marks)

- Q26:** Solve $2x+3y=11$ and $2x-4y=-24$ and hence find the value of m for which $y = mx + 3$
- Q27:** Solve $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$.
- Q28:** Prove that $\sqrt{5}$ is irrational number.

Q29: Solve $\frac{3x}{2} - \frac{5y}{3} = -2$, $\frac{x}{3} + \frac{y}{2} = \frac{13}{6}$

Q30: The altitude of a right triangle is 7 cm. less than its base. If hypotenuse is 13 cm, find other two sides.

Q31: The larger of two supplementary angles exceeds the smaller by 18° . Find them?

Section-D (4x5 marks = 20 marks)

Q32: Five years hence the age of Jacob will be three times that of his son. Five years ago Jacob's age was 7 times that of his son. What are their present ages?

Q33: A train travels a distance 480 km. at uniform speed. If the speed had been 8km/h less than it would have taken 300 hours more to cover same distance, find the speed of train.

Q34: Find zeroes of polynomial $6x^2-7x-3$ and hence verify the relationship between zeroes and the coefficients?

Q35: Prove that $\sqrt{3}$ is irrational number and hence use to this prove that $3+2\sqrt{3}$ is also irrational.

Section E (3x 4 marks = 12 marks)

Q36: Given the system of linear equations. –

$$x-y+1=0 \text{ and } 3x+2y-12=0$$

(i) Draw the graph of above lines on the same axis.

(ii) Find vertices of triangle formed by these lines and x-axis.

Q37: The sum of the digits of a two-digit number is 9. Nine times of this number is twice the number obtained by reversing the order of digits.

(i) Form pair of linear-equations of above statements.

(ii) Solve the linear-equations and hence find the number.

Q38; There is a circular track around a sports ground. Sonia takes 18 minutes to go one round of ground while Ravi takes 12 minutes for the same. Both start at the same point and at the same time.

(i) After how many minutes will they meet again at the starting point.

(ii) How many rounds of the ground Sonia and Ravi take during this time.