Quarterly Examination 2019
Class- X

Time- 3 hrs.

Subject- Mathematics

[M.M.-100]

Instructions:-
1. All questions are compulsory.
2. Question numbers 1 to 5 are multiple choice type questions.
3. Internal choice has been provided in question numbers 6 to 26.
4. Mark allotted to each question are written in front of question.

Q 1. Choose the correct answer:- [5]

i) If the product of two number's is equal to 32 And LCM of these numbers is 8 then HCF will be:

    (a) 4   (b) 8   (c) 32   (d) 256

ii) $\frac{35}{50}$ The decimal expansion of $\frac{35}{50}$ is

    (a) Terminating   (b) Non terminating recurring

    (c) Non terminating non recurring   (d) None of these

iii) Zeros of polynomial $x^2 +7x +10$ is

    (a) 2, 5   (b) -2, -5   (c) -2, 5   (d) 2, -5

iv) α, β, γ are the zeros of polynomial $ax^3 + bx^2 + cx + d$ then the value of $\alpha\beta\gamma$ is

    (a) -b/a   (b) c/a   (c) -d/a   (d) a/b

v) Zeros of linear polynomial $ax+b$ is

    (a) a/b   (b) b/a   (c) -b/a   (d) ab

Q 2. Fill in the blank:- [5]

i) Probability of impossible event is ....

ii) Probability of Definite event is ....

iii) There are .... days in leap year

iv) In a throw of a die the probability for getting odd digit is ....

v) The term of maximum frequency is called ....

Q 3. Write True/False:- [5]

(i) Algebraic expression $x^2 - 2\sqrt{x} + 7$ is not a polynomial.

(ii) Degree of a zero polynomial is 0.

(iii) H.C.F of 4 and 7 is 28

(iv) For equation $ax^2 + bx + c = 0$, Sum of the roots of is $-\frac{c}{a}$.

(v) If $b^2 - 4ac = 0$ then quadratic equation $ax^2 + bx + c = 0$ has two equal roots.

Q 4. Match the column. [5]

'A'	'B'
(i) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	a. Linear equation
(ii) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	b. Lines intersecting(
(iii) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	c. Straight line
(iv) $ax + by = c$	d. Lines parallel
(v) Graph of $ax + by = c$	e. Lines coincide

Q 5. Answer in one word/ sentence.

(i) Write formula for finding mean of grouped data by direct method.

(ii) Write the formula for finding mode of grouped data.

(iii) Write formula for finding median of grouped data.

(iv) Write class mark of class interval 10-25.

(v) Write relation between mean, median and mode.
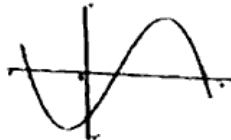
Q 6. Write Euclid's Division Lemma.

or

Use Euclid's division algorithm to find the HCF of 135 and 225

Q 7. Find the zeroes of the quadratic polynomial $x^2 - 2x - 8$. [2]

or

Find a quadratic polynomial, the sum and product of whose zeroes are $\frac{1}{4}$ and -1 respectively.

Q 8. Find the number of zeroes of $p(x)$ represented by given figure. [2]

or

Write relation between dividend, divisor, quotient and remainder.

Q 9. A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at *random* from the box, what is the probability that it will be (i) blue? (ii) red? [2]

or

If P(E) = 0.05, what is the probability of 'not E'?

Q 10. A die is thrown once. Find the probability of getting a prime number. [2]

or

12 defective pens are accidentally mixed with 132 good ones. It is not possible to just look at a pen and tell whether or not it is defective. One pen is taken out at random from this lot. Determine the probability that the pen taken out is a good one.

Q.11. Find the HCF of 12, 15 and 21 by applying the prime factorisation method. [3]

or

Show that every positive even integer is of the form $2q$, and that every positive odd integer is of the form $2q + 1$, where q is some integer.

Q.12. Divide the polynomial $p(x)$ by the polynomial $g(x)$ and find the quotient and remainder $p(x) = x^3 - 3x^2 + 5x - 3$, $g(x) = x^2 - 2$. [3]

OR

Find the sum and product of *zeros of* quadratic polynomial $6x^2 - 3 - 7x$.

Q.13. The cost of 2 kg of apples and 1kg of grapes on a day was found to be ₹160. After a month, the cost of 4 kg of apples and 2 kg of grapes is ₹300. Represent the situation algebraically and geometrically. [3]

or

Use elimination method to find solution of the following pair of linear equations:
$x + y = 12$
$x - y = 2$

Q.14. Find the roots of quadratic equations $x^2 - 3x - 10 = 0$ [3]

OR

Find the nature of roots of equation $2x^2 - 3x + 5 = 0$

Q.15. Show that any positive odd integer is of the form $4q + 1$ or $4q + 3$, where q is some integer. **[4]**

OR

Prove that is $3 + 2\sqrt{5}$ a irrational number.

Q.16. Check whether the first polynomial $t^2 - 3$ is a factor of the second polynomial $2t^4 + 3t^3 - 2t^2 - 9t - 12$ by dividing the second polynomial by the first polynomial. **[4]**

or

Find the zeroes of the quadratic polynomial $3x^2 - x - 4$

Q.17. Find the values of k for quadratic equations $2x^2 + kx + 3 = 0$, has two equal roots. **[4]**

or

Find the roots of the following equations: $x - \dfrac{1}{x} = 3, x \neq 0$

Q.18. The 17th term of an AP exceeds its 10th term by 7. Find the common difference. **[4]**

Or

Find 10th term of the AP : $3, 8, 13, 18, \ldots,$

Q.19. The difference between two numbers is 26 and one number is three times the other. Find them. **[4]**

or

Ritu can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current. https://www.mpboardonline.com

Q.20. 2 women and 5 men can together finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone. **[4]**

or

Solve the following pairs of equations by reducing them to a pair of linear equations:
$$\frac{1}{2x} + \frac{1}{3y} = 2, \frac{1}{3x} + \frac{1}{2y} = \frac{13}{6}$$

Q.21. Find a quadratic polynomial for the given numbers as the sum and product of its zeroes -3 and 2 respectively. **[4]**

or

Divide $3x^3 + x^2 + 2x + 5$ by $1 + 2x + x^2$

Q.22. Find the roots of the equation $2x^2 - 7x + 3 = 0$ by factorisation. **[5]**

or

Find two consecutive positive integers, sum of whose squares is 365.

Q.23. Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{\dfrac{5}{3}}$ and $-\sqrt{\dfrac{5}{3}}$. **[5]**

or

On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find $g(x)$.

Q. 24. For which value of k will the following pair of linear equations have no solution?

$$3x + y = 1$$
$$(2k - 1)x + (k - 1)y = 2k + 1$$

or

Solve the following pair of equations by substitution method:

$$3x + 4y = 10$$
$$2x - 2y = 2$$

Q. 25. A survey was conducted by a group of students as a part of their environment awareness programme, in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house. **[5]**

Number of plants	0-2	2-4	4-6	6-8	8-10	10-12	12-14
Number of houses	1	2	1	5	6	2	3

OR

During the medical check-up of 35 students of a class, their weights were recorded as follows:

Weight (in kg)	Less than 38	Less than 40	Less than 42	Less than 44	Less than 46	Less than 48	Less than 50	Less than 52
Number of students	0	3	5	9	14	28	32	35

Draw a less than type ogive for the given data.

Q.26. The following distribution gives the daily income of 50 workers of a factory. **[5]**

Daily income (in rs.)	100 − 120	120 − 140	140 − 160	160 − 180	180 − 200
Number of workers	12	14	8	6	10

Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive.

OR

The distribution below gives the weights of 30 students of a class. Find the median weight of the students.

Weight (in kg)	40 − 45	45 − 50	50 − 55	55 − 60	60 − 65	65 − 70	70 − 75
Number of students	2	3	8	6	6	3	2

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