



ANNUAL EXAMINATIONS 2022

(MODEL PAPER)

MATHEMATICS-X

(Science Group)

Total Duration: 03 Hours

Total Marks: 75

Section "A" Multiple Choice Questions (M.C.Os)

Time Allowed: 35 Minutes

Max Marks: 30

Q1. Choose the correct answer for each from the given option and shade the circle in the answer

copy:

Note: This Section consists of 30 questions, attempt all questions each questions carries 01 marks.

i. $\frac{a^{-11}}{a^{-3}} = \underline{\hspace{2cm}}$.

- A. a^8
- B. a^9
- C. a^{-8}
- D. a^{-33}

ii. **The supplement of 120° is:**

- A. 90°
- B. 60°
- C. 40°
- D. 30°

iii. **If sum of two angles is 90° then angles are called**

- A. Complementary angles
- B. Supplementary angles
- C. Exterior angles
- D. Opposite angles

iv. **A triangle having one right angle is:**

- A. Acute triangle
- B. Obtuse triangle
- C. Right triangle
- D. Equilateral triangle

v. If an angle with measure less than 90° is:

- A. Acute angle
- B. Obtuse angle
- C. Right angle
- D. Reflex angle

vi. The complement of 40° is:

- A. 60°
- B. 140°
- C. 90°
- D. 50°

vii. $(a - b + c)^2 =$ _____ :

- A. $a^2 + b^2 + 2ab + 2bc + 2ca$
- B. $a^2 + b^2 + c^2 + 2ab - 2bc + 2ca$
- C. $a^2 + b^2 + c^2 - 2ab - 2bc + 2ca$
- D. $a^2 + b^2 + c^2 - 2ab - 2bc + 2abc$

viii. $8^{1/3} \times 36^{1/2} =$ _____ .

- A. 8
- B. 12
- C. 16
- D. 18

ix. If $n(A) = 4$ then $n[p(A)] =$

- A. 32
- B. 16
- C. 8
- D. 4

x. $(\sqrt[n]{x})^n$

- A. x^n
- B. $x^{\frac{1}{n}}$
- C. x
- D. x^{2n}

xi. Degree of polynomial $3x^2y^5 - 2x^4y^2 + x^2y^7$

- A. 7
- B. 6
- C. 5
- D. 9

xii. Factors of $4a^2-9b^2$.

- A. $(2a-3b)(2a+3b)$
- B. $(3a-2b)(3a+2b)$
- C. $(4a+9b)(4a-9b)$
- D. $(4b-9a)(4b+9a)$

xiii. The L.C.M of $2a^3b^2c$ & $8a^2b^5c^2$

- A. $8a^3b^5c$
- B. $8a^2b^2c$
- C. $8a^3b^5c^2$
- D. $8a^2b^5c$

xiv. If $a + b = 2$ and $a - b = 2$ then value of $a^2 + b^2$ is _____

- A. -1
- B. 4
- C. 2
- D. 0

xv. Algebraic expression involving more than one term and less than three terms is known as

- A. Monomial
- B. Binomial
- C. Trinomial
- D. Multimomial

xvi. $(b - d)^3 =$ _____

- A. $b^3 - d^3 - 3bd$
- B. $b^3 - d^3 + 3b^2d - 3bd^2$
- C. $b^3 + d^3 - 3bd$
- D. $b^3 - d^3 - 3b^2d + 3bd^2$

xvii. $(5a + 7)(5a - 7) =$ _____

- A. $25a^2 - 49$
- B. $25a^2 + 49$
- C. $25a - 49$
- D. $25 - 49a^2$

xviii. The order pair (0,2) lies in lon.....

- A. 1st quadrant
- B. 4th quadrant
- C. X.axis
- D. Y.axis

xix. The plane made by the x and y- axis is called.....plane.

- A. Rectangular
- B. Coordinate
- C. Vertical
- D. Horizontal

xx. $(\sqrt{x} - \sqrt{y})(\sqrt{x} + \sqrt{y}) =$ _____

- A. $(\sqrt{x} - \sqrt{y})$
- B. $(x + y)$
- C. $(x - y)$
- D. $(\sqrt{x} + \sqrt{y})$

xxi. It should be added to $x^2 + \frac{1}{x^2}$ to make it perfect square

- A. xy
- B. x^2y^2
- C. $2xy$
- D. 2

xxii. A triangle having no side congruent is called____ triangle.

- A. Isosceles
- B. Scalene
- C. Acute
- D. Right

xxiii. The measure of each angle of an equilateral triangle is_____.

- A. 90°
- B. 45°
- C. 30°
- D. 60°

xxiv. The distance of any point of a circle from its center is called:

- A. Chord
- B. Diameter
- C. Tangent
- D. Radius

xxv. The line intersects the circle in only one point then line is called:

- A. Chord
- B. Diameter
- C. Tangent
- D. Secant

xxvi. $\sin \theta$

- A. $\frac{P}{H}$
- B. $\frac{B}{H}$
- C. $\frac{P}{B}$
- D. $\frac{H}{P}$

xxvii. Additive inverse of matrix $\begin{bmatrix} -2 & 4 \\ 3 & -6 \end{bmatrix}$

- A. $\begin{bmatrix} -2 & 4 \\ -3 & 6 \end{bmatrix}$
- B. $\begin{bmatrix} 2 & -4 \\ -3 & 6 \end{bmatrix}$
- C. $\begin{bmatrix} 2 & -4 \\ -3 & 6 \end{bmatrix}$
- D. $\begin{bmatrix} -6 & -4 \\ -3 & -2 \end{bmatrix}$

xxviii. In the following quadratic equation value of a, b & c are: $x^2 - 4x + 3 = 0$

- A. a=1, b=4, c=3
- B. a=1, b=-4, c=-3
- C. a=1, b=4, c=-4
- D. a=1, b=-4, c=3

xxix. A cumulative frequency table is also called

- a. A Data
- b. B Less then cumulative frequency table
- c. C Histogram
- d. D Frequency Table

xxx. If the mean of 6 numbers is 41 than the sum of these numbers is

- A. 250
- B. 246
- C. 134
- D. 456



SECTION 'B' (SHORT-ANSWER QUESTIONS)

- ❖ Write the Question in the space provided in Section B in the answer copy and write the answer below:

NOTE: Attempt any 06 questions from this section. Each question carries 05 marks.

Q2A If $\chi \propto 1/y$, and $y=8$ when $\chi=30$, find y when $\chi=12$

OR

Q2B. Find the value of $4xy$ when $x + y = 6$ & $x - y = 4$

Q3A Prove the using formulae:

$$(a+2)(a-2)(a^2-2a+4)(a^2+2a+4)=a^6-64$$

OR

Q3B Find the value of $3X-4Y-2Z$ when:

$$X=3x^3 - 7x^2 - 9x + 7, \quad Y=12x^3 + 3x^2 - 13x + 1, \quad \text{and} \quad Z= 6x^3 - 5x^2 - 6x + 4$$

Q4A. A What should be added to each term of the ratio $a : b$ to make $x : y$? y^{12}

OR

Q4B If $(3x + 5y) : (7x - 4y) = 7 : 4$ then find the ratio $x : y$

Q5A Solve $2x^2 - 5x + 3 = 0$

OR

Q5B What should be added to each term of the ratio $a : b$ to make $x : y$?

Q6A. Find the value of $p^2 + q^2 + r^2$ when $p+q+r=8$ & $pq+qr+rp=\frac{1}{2}$

OR

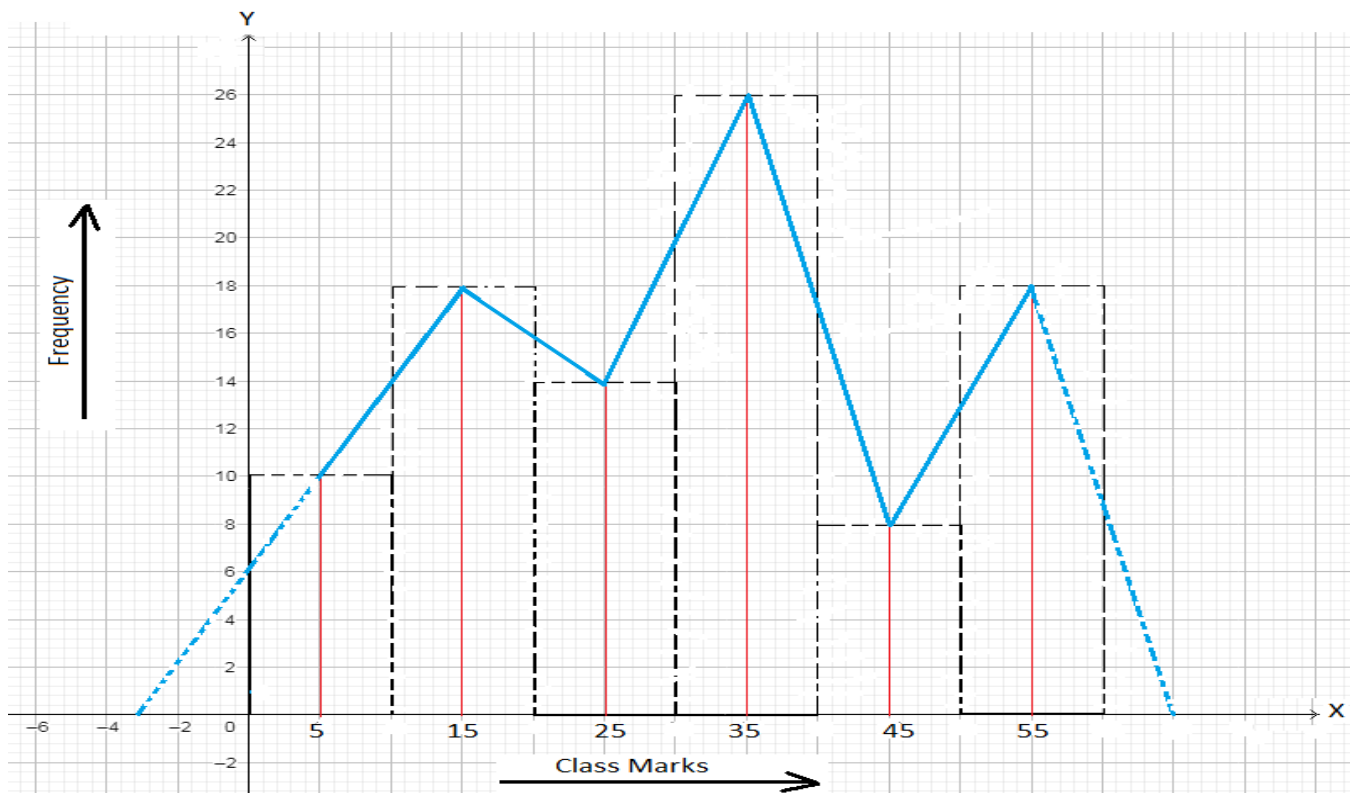
Q6B. Solve the following quadratic equation by using quadratic formula:

$$3a^2 - 12a - 15 = 0$$

Q7A Solve the system of equation $2x + y = -4$ and $5x - 3y = 1$ by the method of elimination.

OR

Q7B The frequency polygon of a frequency distribution is shown below.



Answer the following about the distribution from the histogram.

- (i) What is the frequency of the class interval whose class mark is 15?
- (ii) What is the class interval whose class mark is 45?
- (iii) Construct a frequency table for the distribution.

SECTION "C" (DETAILED-ANSWER QUESTIONS) Max Marks: 15

Note: Attempt any 2 questions from this section. Each question carries 7.5 marks.

- ❖ Write the Question in the space provided in Section C in the answer copy and write the answer below

Q8A If a transversal intersects two coplanar lines such that the pair of alternate angles are congruent then the lines are parallel.

OR

Q8B. The sum of the measure of the angles of a triangle is 180°

Q9A If two lines intersect each other, then vertically opposite angles are congruent. Prove it

OR

Q9B. If two lines intersect each other, then vertically opposite angles are congruent. Prove it