**MATHEMATICS**

**For Class-X**

**1. QUADRATIC EQUATIONS**

8.1 Quadratic Equation Define quadratic equation.

8.2 Solution of Quadratic Equations

8.3 Quadratic Formula

8.4 Equations Reducible to Quadratic Form

8.5 Radical Equations

**2. THEORY OF QUADRATIC EQUATIONS**

9.1 Nature of the Roots of a Quadratic Equation

9.2 Cube Roots of Unity and their Properties

9.3 Roots and Coefficients of a Quadratic Equation

9.4 Symmetric Functions of Roots of a Quadratic Equation

9.5 Formation of Quadratic Equation

9.6 Synthetic Division

9.7 Simultaneous Equations

**3. VARIATIONS**

10.1 Ratio, Proportions and Variations

10.2 Theorems on Proportions

10.3 Joint Variation

10.4 K-Method

**4. PARTIAL FRACTIONS**

11.1 Proper, Improper and Rational Fraction

11.2 Resolution of Fraction into Partial Fractions

**5. SETS AND FUNCTIONS**

12.1 Sets

12.1.1 Operations on Sets

12.1.2 Properties of Union and Intersection

12.1.3 Venn Diagram

12.1.4 Ordered Pairs and Cartesian product

12.2 Binary relation

12.3 Function

**6. BASIC STATISTICS**

13.1 Frequency Distribution

13.2 Cumulative Frequency Distribution

13.3 Measures of Central Tendency

13.4 Measures of Dispersion

**7. INTRODUCTION TO TRIGONOMETRY**

16.1 Measurement of an Angle

16.2 Sector of a Circle

16.3 Trigonometric Ratios

16.4 Trigonometric Identities

16.5 Angle of Elevation and Depression.

**8. PROJECTION OF A SIDE OF A TRIANGLE**

24.1 Projection of a Side of a Triangle

**9. CHORDS OF A CIRCLE**

25.1 Chords of a Circle

**10. TANGENT TO A CIRCLE**

26.1 Tangent to a Circle

**11. CHORDS AND ARCS**

27.1 Chords and Arcs

**12. ANGLE IN A SEGMENT OF A CIRCLE**

28.1 Angle in a Segment of a Circle

**13. PRACTICAL GEOMETRY – CIRCLES**

30.1 Construction of Circle

30.2 Circles attached to Polygons

30.3 Tangent to the Circle

**RECOMMENDED REFERENCE BOOKS FOR CLASS X**

The question papers will be syllabus oriented. However, the following book is recommended for reference and supplementary reading:

Mathematics 10 (Science Group)

Ilmi Kitab Khana, Kabir Street

Urdu Bazar, Lahore

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| LOGO |  |
| Federal Board SSC-II Examination  Mathematics Model Question Paper | Roll No:     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |   Answer Sheet No: \_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of Candidate: \_\_\_\_\_\_\_\_\_\_\_\_  Signature of Invigilator: \_\_\_\_\_\_\_\_\_\_\_\_ |

**SECTION – A**

Time allowed: 20 minutes Marks: 15

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| Note: Section-A is compulsory and comprise pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil. |

Q.1 Insert the correct option i.e. A / B / C / D in the empty box provided opposite each part. Each part carries one mark.

i. The solution set of is:

A. {0} B. {6}

C. {0, 6} D. { –6 , 6}

ii. Sum of the cube roots of unity is:

A. 0 B. 1

C. D. 3

iii. If then the roots of are:

A. imaginary B. irrational

C. equal D. unequal

iv. The third proportional of 6 and 12 is:

A. 72 B. 12

C. 18 D. 24

v. If then:

A. B.

C. D.

vi. is:

A. an improper fraction B. proper fraction

C. an identity D. non of these

vii. The relation {(1, 2), (2, 3), (3, 3), (3, 4)} is:

A. one-one function B. on-to function

C. into function D. not a function

viii. = \_\_\_\_\_\_\_\_\_\_\_\_

A. B.



C. *A* D.

ix. Geometric mean of the observation 2, 4, 8 is equal to:

A. B.

C. D. 64

Page 1 of 2 Turn Over

**DO NOT WRITE ANYTHING HERE**

x. 45° is equal to:

A. radians B. radians

C. radians D. radians

xi. A chord passing through the centre of a circle is called:

A. radius B. diameter

C. circumference D. secant

xii. A tangent line intersects the circle at:

A. three points B. two points

C. single point D. no point at all

xiii. The semi circumference and the diameter of a circle both subtend a central angle of:

A. 90° B. 180°

C. 270° D. 360°

xiv. A circle which touches the three sides of a triangle internally is known as:

A. circum circle B. escribe circle

C. incircle D. non of these

xv. How many tangents can be drawn from a point outside the circle?

A. 1 B. 2

C. 3 D. 4

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For Examiner’s use only

15

Q No.1: Total Marks:

Marks Obtained:

Page 2 of 2

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| LOGO |  |
| Federal Board SSC-II Examination  Mathematics Model Question Paper |  |

Time allowed: 2.40 hours Total Marks: 60

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| Note: Sections ‘B’ and ‘C’ comprise pages 1-2 and questions therein are to be answered on the separately provided answer book. Attempt nine parts from section ‘B’ and attempt any three questions from section ‘C’. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly. |

**SECTION-B**

(Marks: 36)

Q.2 Attempt any **NINE** parts of the following. Each part has equal marks.

**(Marks 9x4 = 36)**

i. Solve the equation:

ii. Solve the equation:

iii. If are the roots of the equation . Form equations whose roots are

iv. Prove that

v. The difference of a number and its reciprocal is , find the number.

vi. If a : b = c : d (a, b, c, d # 0) then show that

vii. and a = 3 when b = 4; find *a* when *b = 8*.

viii. Using theorem of componendo and dividendo, solve the equation:

ix. Resolve into partial fractions

x. If , , then verify that

xi. Calculate variance for the data: 10, 8, 9, 7, 5, 12, 8, 6, 8, 2

xii. On 5 term tests in mathematics, a student has made marks 82, 93, 86, 92 and 79. Find median for the marks.

xiii. Verify the identity:

xiv. Find when ,

Page 1 of 2 Turn Over

**SECTION – C**

(Marks: 24)

Note: Attempt any three questions. Each question carries equal marks.

Marks 3

**Q.3** In any triangle square on the side opposite to acute angle is equal to sum of the squares on the sides containing that acute angle diminished by twice the rectangle contained by one of those sides and the projection on it of the other.

**Q.4** Prove that, if two tangents drawn to a circle from a point outside it, are equal in length.

**Q.5** Prove that measure of central angle of minor arc of a circle, is double in measure that of the angle subtended by the corresponding major arc.

**Q.6** Draw two equal circles of each radius 2.4cm. If the distances between their centres are 6cm then draw their transverse tangents.

**Q.7** From an observation point the angles of depression of two boats in line with their point are found to 30° and 45°. Find the distance between the two boats if the point of observation is 4000ft. high.

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