MATHEMATICS
(Selected & Omitted)
Class – 10

UNIT-I COMMERCIAL MATHEMATICS

1. Instalments:

(i) Instalments payments (Finding value of each instalment, not more than two instalments)

Omitted portion: *Finding more than two instalments, sum borrowed, loan, cash price,interest.*

UNIT-II TIME, DISTANCE AND WORK

2. Time and Distance, Time and Work

(i) Time and distance: Conversion of units and relationship among time, distance & speed

(ii) Time and work: Solution of problems based on time and work.

Omitted portion:

(i) Time and Distance: Solution of problems based on time and distance(ii)
Time and Work: Problems related to work done by pipes and taps

UNIT-III ALGEBRA

3. Polynomials:

(i) Zeros of a polynomial. Relationship between zeros and co-efficients of a polynomialwith particular reference to quadratic polynomials.

(ii) HCF and LCM.

(iii) Rational Expressions.

Omitted portion: *Types of problems on Ex.3.3, Q. No.6-17 and 22-24*

4. Linear Equation in Two Variables:

Finding the solution of system of linear equations in two variables by:

(i) Graphical Method

(ii) By Algebraic Methods:

(a) Elimination by substitution method

(b) Elimination by equating the co-efficients

Omitted portion:

(i) Equations reducible to the system of linear equations in two variables (Types of problems from Ex. 4.2, Q. No. 3, 5, 7, 8, 9, 10, 17 - 26)
(ii) cross multiplication method
(iii) word problems from different areas(Ex.4.4)
(iv) Problems based on conditions for solvability of linear equations in two variables
(a) no solution
(b) infinitely many solutions
(c) unique solutions

5. Quadratic Equations:

(i) Finding solution of $ax^2 + bx + c = 0$, $(a \neq 0)$ by
(a) Factorisation method (b) Quadratic formula.

(ii) Application of quadratic equations in solving word-problems from different areas.

(iii) Relationship between discriminant and nature of roots. (Simple problems related to discriminant and nature of roots).

***Omitted portion*:**

(i) Situational problems based on equation reducible to quadratic equations (Like Ex 5.1 Q. No 19, 20, 21, etc.) and accordingly word problems which involved reducible equations.

(ii) Types of problems based on discriminant & nature of roots from Ex. 5.3 Q. No. 4- 12, 14-18

6. Arithmetic Progression (AP):

(i) Introduction to AP by pattern of number.

(ii) General term of an AP, sum to n-terms of an AP.

Omitted portion: *Application in solving daily life problems (Types of problems from Ex.6.2 Q. No.24-27) and Ex.6.3 Q. No.13-25*

7. Sets:

Revision.

(i) Venn Diagrams (not more than three sets).

(ii) Complement of a set, operations on sets (union, intersection and difference of twosets)

Omitted portion: *No Omission*

UNIT – IV GEOMETRY

8. Triangles:

(i) Numerical problems based on Thales theorem and Pythagoras theorem.

Omitted portion: *Omitted the whole chapter with the exception of numerical problems basedon Thales theorem and Pythagoras theorem.*

9. Circles :

(i) (Prove) The angles subtended by an arc at the centre is double the angle subtended byit at any point on the remaining part of the circle.

(ii) (Prove) The angle in a semi circle is a right angle.

(iii) (Prove) Angles in the same segment of a circle are equal.

(iv) (Prove) The sum of either pair of the opposite angles of a cyclic quadrilateral is 180°.

(v) (Prove) The lengths of tangents drawn from an external point to a circle are equal.

(vi) Motivate The tangent at any point of a circle is perpendicular to the radius through the point of contact.

(vii) (Motivate) If a line segment joining two points subtends equal angle at other two points lying on the same side of the line containing the segment, the four points lieon a circle.

(viii) (Motivate) If two arcs of a circle are congruent, their corresponding chords are equal and its converse.

(ix) (Motivate) If an arc of a circle subtends a right angle at any point of the circle in its alternate segment, then it is a semicircle.

(x) (Motivate) If the sum of a pair of opposite angles of a quadrilateral is 180°, the quadrilateral is cyclic.

(xi) (Motivate) If two chords of a circle intersect inside or outside a circle, then the rectangle formed by two parts of one chord is equal in area to the rectangle formed by the two parts of the other.

(xii) (Motivate) If a line touches a circle and from the point of contact a chord is drawn, the angles which this chord makes with the given tangent are equal respectively to the angles formed in the corresponding alternate segments.

(*Motivate means application of the theorem excluding its theoretical proof*)

Omitted portion: *Theoretical proof of*

(i) ***Segment theorem:*** *If two chords of a circle intersect inside or outside a circle, then the rectangle formed by two parts of one chord is equal in area to the rectangle formed by the two parts of the other.*

(ii) ***Alternate segment theorem:*** *If a line touches a circle and from the point of contact a chord is drawn, the angles which this chord makes with the given tangent are equal respectively to the angles formed in the corresponding alternate segments.*

10. Constructions :

(i) Internal division of a line segment in a given ratio.

(ii) Construction of tangent(s) to a circle

(a) At a point on it without using the centre.

(b) At a point on it using the centre.

(c) From a point outside it.

[Constructions using ruler and compasses only].

(iii) Construction of a triangle, given its base, vertical angle and either altitude or median through the vertex.

Omitted portion: *- Construction of a triangle similar to a given triangle*

UNIT-V CO-ORDINATE GEOMETRY

11. Co-ordinate Geometry:

(i) Review the concepts of coordinate geometry done earlier including graphs of linear equations. Awareness of geometrical representation of quadratic polynomials.

(ii) Distance between two points and section formula (internal)

Omitted portion: *- Area of a triangle (Ex.11.3)*

UNIT VI TRIGONOMETRY

12. Trigonometric identities

(a) Proving simple identities based on the following: (proofs not required)

(i) $\sin^2 A + \cos^2 A = 1$

(ii) $1 + \tan^2 A = \sec^2 A$

(iii) $1 + \cot^2 A = \operatorname{cosec}^2 A$

Omitted portion: *Question of the type Ex.12 Q. No.43 – 49*

13. T-ratios of Complementary Angles

(b) Trigonometric ratios of complementary angles:

(i) $\sin(90° - A) = \cos A$

(ii) $\cos(90° - A) = \sin A$

(iii) $\tan(90° - A) = \cot A$

(iv) $\cot(90° - A) = \tan A$

(v) $\sec(90° - A) = \operatorname{cosec} A$

(vi) $\operatorname{cosec}(90° - A) = \sec A$

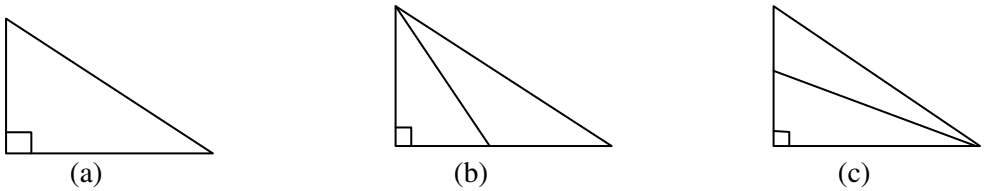
(c) Problems based on the relations given above (b).

Omitted portion: *No Omission*

14. Heights and Distances:

- Simple problems on heights and distances.

(i) Problems should not involve more than two right triangles and it must be of thetypes as the figures given below :



(a) (b) (c)

(ii) Angles of elevation/depression should be only 30°, 45°, 60°

Omitted portion: *Problems other than mentioned in the revised course (above)*

UNIT - VII MENSURATION

15. Areas Related to Circle:

(i) Problems based on areas and circumferences of a circles. (Ex.15.1)

Omitted portion:

(i) Areas of sectors and segments of a circle (Ex 15.2)(ii)
Areas of combination of plane figures (Ex 15.3)

16. Surface Areas and Volumes:

(i) Problems on finding surface areas and volumes of combinations of any two of the following-cubes, cuboids, spheres, hemispheres and right circular cylinders/cones. (Problems with combination of not more than two different solids be taken).

(ii) Problems involving converting one type of solid into another and other mixed problems.

Omitted portion: *Frustum of a cone (Ex. 16.3)*

UNIT - VIII STATISTICS AND PROBABILITY

17. Mean:

(i) Mean of grouped data

(ii) Median of grouped data

Omitted **portion:**

(i) Mean of a discrete frequency distribution(ii)
Mean of inclusive Class Interval
(iii) Finding of mode of grouped data

18. Probability:

(i) Elementary idea of probability as a measure of uncertainty.

Omitted portion: *No Omission*

19. Pictorial representation of data:

Construction of pie chart (sub parts of pie chart should not exceed five).Degrees of central angle should be multiples of 5.

Omitted portion: *- Reading of pie chart*

Weightage to Form of Questions :

Sl/no.	*Form of Questions*	*No. of Questions*	*Marks for each question*	*Total Marks*
2.1	Objective type	24	1	24
2.2	Short Answer I	10	2	20
2.3	Short Answer II	07	3	21
2.4	Long Answer	03	5	15
	TOTAL	**44**		**80**

Weightage to Content Area :

Sl/no.	*Topic*	*Marks*
3.1	Arithmetic	08
3.2	Algebra	18
3.3	Sets	03
3.4	Geometry	15
3.5	Coordinate Geometry	08
3.6	Trigonometry	10
3.7	Mensuration	10
3.8	Statistics	08
	TOTAL	**80**

Scheme of Options : All questions shall be compulsory i.e. there shall not be any overall choice in the questions paper. However, internal choices have been provided in 2 questions of 3 marks each and 1 question of 5 marks. These choices may be given from within the same topic.

(a) Blue Print Sample 1 : Mathematics Class 10

Forms of Question/ Topic	Knowledge				Understanding				Application				HOTS				Total
	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	
Arithmetic	2(2)	2(1)			1(1)		3(1)										8(5)
Algebra	3(3)	2(1)			1(1)	2(1)				2(1)	3(1)	5(1)					18(9)
Geometry	2(2)	2(1)			1(1)	2(1)	3(1)									5(1)	15(7)
Coordinate Geometry	2(2)				1(1)	2(1)					3(1)						8(5)
Trigonometry	2(2)		3(1)			2(1)					3(1)						10(5)
Mensuration	2(2)				3(3)	2(1)									3(1)		10(7)
Statistics	1(1)									2(1)		5(1)					8(3)
Sets	1(1)				1(1)				1(1)								3(3)
Sub- Total	**15(15)**	**6(3)**	**3(1)**		**8(8)**	**10(5)**	**6(2)**		**1(1)**	**4(2)**	**9(3)**	**10(2)**			**3(1)**	**5(1)**	**80(44)**
Total	**24(19)**				**24(15)**				**24(8)**				**8(2)**				

(b) Blue Print Sample 2

Forms of Question/ Topic	Knowledge				Understanding				Application				HOTS				Total
	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	Obj	SA I	SA II	LA	
Arithemetic	2(2)				1(1)	2(1)	3(1)										8(5)
Algebra	4(4)	2(1)			1(1)				1(1)		3(1)	5(1)		2(1)			18(10)
Geometry		2(1)	3(1)		2(2)	2(1)			1(1)			5(1)					15(7)
Coordinates Geometry		2(1)			2(2)				1(1)						3(1)		8(5)
Trigonometry			3(1)		2(2)	2(1)									3(1)		10(5)
Mensuration		2(1)			3(3)							5(1)					10(5)
Statistics	1(1)		3(1)		2(2)					2(1)							8(5)
Sets						2(1)			1(1)								3(2)
Sub- Total	**7(7)**	**8(4)**	**9(3)**		**13(13)**	**8(4)**	**3(1)**		**4(4)**	**2(1)**	**3(1)**	**15(3)**		**2(1)**	**6(2)**		**80(44)**
Total	**24(14)**				**24(18)**				**24(9)**				**8(3)**				

Note : 1) The figures in the bracket denote the number of questions.

2) This is only a sample Blue Print. The question setter may develop his/her own Blue Print as pser the question design.