

PART-A

1. Briefly explain general instructional objectives and specific learning outcome.

General instructional objectives:-

An intended outcome of instruction that has been stated in general enough terms to encompass a domain of student performance. This general instructional objective must be further clarified by a set of specific learning outcome.

Specific Learning outcomes:-

Learning outcomes are statements that describe should acquire by the end of a particular assignments, class, course, or program, and help students understand why that knowledge and those skills will be useful to them.

General Instructional objectives and Specific Learning

* Knowledge

* Understanding

* Application

* Skill

* Appreciation objectives

* Interest objectives

* Attitude objective

Knowledge:-

The pupil acquires knowledge of terms, concepts, symbols, definitions, principles, processes, and formulae of mathematics at the secondary stage.

The pupil recalls or reproduces and recognises

understanding:-

- * The pupil develops understanding of terms, concepts, symbols, definitions, principles, process and formula of mathematics at the secondary stage.

- * The pupil give illustration, detects error and correct them, compares, discriminations between closely related concepts, interprets and verifies.

Application:-

- * The pupil applies his knowledge and understanding of mathematics to unfamiliar situation.

- * The pupil Analysis and find out what is required, finds out the adequacy, superfluity or relevancy of data.

Skill :-

- * To acquire skills of computation, drawing geometrical figures and graph, reaching tables, charts, graphs etc.,

Appreciation objectives:-

- * The pupil appreciates the role of mathematics in day to day life.

- * It appreciates the role of mathematics in solving problems of other branches of sciences and the symmetry of the figures and designs.

Interest objective:-

- * The pupil develops interest in mathematics.

- * It reads literature on mathematics and solves mathematical puzzles.

- * It participates in the activities of maths club and does additional study in mathematics.

Attitude objective:-

- * The pupil acquires the positive attitudes towards mathematics.

- * It specifies his teacher of mathematics and like to take tests in mathematics. And it promotes the activities of mathematics clubs in the school.

GILs and SOLs relating to cognitive, Affective and psychomotor domains for teaching mathematics

cognitive domain :-

while teaching mathematics at high school and higher secondary schools, the three classes of objectives under levels of cognitive domain which form the basis for other higher levels of objectives namely knowledge, comprehension and application can be given priority over the other objectives.

The other higher mental abilities such as analysis, synthesis and evaluation are possible when the students attain the necessary intellectual and mental maturity.

GILs	SOLs
* knowledge:- The people acquires knowledge of terms, symbols, concepts, definitions, principles, processes and formulae in Mathematics.	The pupils * recalls or reproduces * Recognises * defines * states definitions, theorems, formula.
* comprehension:- The people develops understanding of terms, symbols, concepts, definitions, principles, processes and formulae	The pupil gives * examples * explains * describes * illustrates * identifies * compares * discriminates * classifies as per criteria * estimates the result.

* Application:-

The pupil applies his/her knowledge and understanding of mathematics to similar or new situations

The pupil

- * analyses what is given and what is to be found out
- * selects suitable method
- * formulates hypothesis
- * suggests alternative method

Affective Domain:-

There are adequate empirical evidences to show the success in any field of work depends upon the individual's attitude towards the task, his interest and involvement in the work and so on.

Success in mathematics also depends upon the student's interest in the subject, his favourable disposition towards mathematics and his scientific temper of mind.

GLOs

* Interest:-

The pupil develops interest in mathematics

SLOs

The pupils,

- * Reads literature on mathematics
- * Solves mathematical puzzles
- * Give shortcuts for solving problems.
- * does additional study in maths.

* Positive Attitude:-

The pupil acquires positive attitude towards mathematics.

The pupils,

- * Likes his teacher of mathematics
- * Exhibits enthusiasm in learning mathematics
- * Listens with interest & enthusiasm to talks on topics in mathematics

* Scientific attitude:-

The pupil develops scientific attitude through the study of mathematics.

The pupil,

- * Accept a proposition only when logically proved
- * Examines all aspects of a problem.
- * Accepts error without hesitation

Psychomotor Domain:-

In mathematics the following skills may be developed. Some of these skills are purely psychomotor they have to be integrated with the classes of objectives under cognitive domain.

GILs

* The pupil develops skill in drawing figures

* The pupil develops skill in drawing graphs.

* The pupil develops skill in reading table.

SLOs

The pupil

- * Draws fairly accurate free hand figures
- * Selects appropriate geometrical instruments
- * measures with speed and accuracy.

- * Selects appropriate scale
- * Tabulates correctly
- * Plots the point neatly and correctly.
- * draws the graphs neatly and correctly.

- * Reads the table correctly
- * Read the table with speed and accuracy.

2. Explain the aims and objectives of teaching mathematics with suitable example.

Aims of teaching mathematics:-

* The Aims of teaching mathematics and sciences will be distinctly different from those of teaching languages and social sciences.

* The aims of mathematics education are derived from and intimately related to the broad aims of education or goals of education.

* Aims of teaching mathematics can be classified under the following heads..

* Practical Aims

* Disciplinary Aims

* Cultural Aims

* Social Aims

* Vocational Aims

* Aesthetical Aims

Practical Aims:-

* To enable the students to have clear ideas about number concept

* To give the individual an understanding of ideas and operations in number and quantity needed in daily life.

* To enable the individual to become proficient in the four fundamental operations of addition, subtraction, multiplication and division.

* To provide the basis of mathematical skill and processes which will be needed for vocational purposes

* To enable the student to make appropriate approximations

* To enable the individual to apply his mathematics to a wide range of problems that occur in daily life

Disciplinary aims:-

- * To provide opportunities that enable the learner to exercise and discipline mental faculties.
- * To help the learner in the intelligent use of reasoning power.
- * To develop constructive imagination and inventive faculties.
- * To develop the character through systematic and orderly habits.
- * To help the individual to become self-reliant and independent.

Cultural Aims:-

- * To enable the learner to appreciate the part played by mathematics in the culture of the past and that it continues to play in the present world.
- * To enable the student to appreciate the role played by mathematics in preserving and transmitting our cultural traditions.
- * To help the students to explore creative fields such as art and architecture.
- * To make the learner aware of the strengths and virtues of the culture he has inherited.

Social Aims:-

- * To enable the student to understand how the methods of mathematics such as scientific, intuitive, deductive and inventive are used to investigate.
- * To help the learner appreciate how mathematics contributes to his understanding of natural phenomena.
- * To help the pupil interpret social and economic phenomena.
- * To help the pupil acquire social and moral values to lead a fruitful life in the society.

Aesthetic Aim:-

- * To Admire the delicate harmony of numbers and forms.

- * To marvel when a new discovery opens an unexpected perspective.

- * To know the beauties of its non-symmetry and proportion in its results, simplicity, compactness and completeness, regularity and order which can be found elsewhere only in works of the greatest beauty.

Vocational aim:-

- * To prepare us for various occupations like engineering, accountancy, auditing, taxation, banking, surveying, trade, designing, teaching, agriculture and etc.

- * To know the benefits of mathematics in their development.

- * To help in achieving vocational efficiency in many spheres.

- * To get idea about the demands of a sound Mathematical background.

Objectives of teaching Mathematics:-

- * Objectives are the specific and precise behavioural outcome of teaching particular topic in mathematics.

- * The objectives of a topic in mathematics helps in realising some general aims of teaching mathematics.

- * Objectives of teaching Mathematics are given by

- * Knowledge

- * Appreciation objectives

- * Understanding

- * Interest objectives

- * Application

- * Attitude objectives

- * Skill

- * Objective related to Personality

trait

Knowledge:-

- * The pupil acquires knowledge of terms, concepts, symbols, definitions, principles, processes and formula of mathematics at the secondary stage.
- * To demonstrate the recalls and recognizes.

Understanding:-

- * The pupils give illustration, detects error and correct them.
- * Discriminates between closely related concepts.
- * classifies as per criteria.
- * Identifies relationship among the given data
- * Estimates the result
- * Interprets and verifies.

Application:-

- * The pupil applies his knowledge and understanding of mathematics to unfamiliar situation.
- * The pupil Analysis and finds out what is required.
- * Find out the adequacy, superfluity or relevancy.
- * Established relationship among use data.
- * Select the appropriate method for solving the problems.
- * Suggests alternative methods

Skill :-

- * To acquire skills of computation, drawing geometrical figures and graphs, reading tables, charts, graphs etc,
- * computation
- * Drawing geometrical figures and graphs
- * Reading tables, charts, graphs etc,

Appreciation objectives:-

- * The pupil appreciates the role of mathematics in day to day life
- * Appreciates the role of mathematics in solving problems of other branches of sciences.
- * Appreciates the symmetry of the figures and designs
- * Appreciates the development of quantities like brevity and exactness through the study of mathematics.

Interest objectives:-

- * The pupil develops interest in mathematics
- * Reads literature on mathematics
- * Solves mathematical puzzles
- * Participates in the activities of maths club.
- * Give short cuts of solving problems.

Attitude objective:-

- * The pupil acquires the positive attitudes towards mathematics.
- * Like his teacher of mathematics
- * Like to take tests in mathematics
- * Like to be on the company of other students of mathematics.
- * Helps students who are weak in mathematics.

Objective related to personality traits:-

- * The pupil develops traits like
 - * Punctuality
 - * Regularity
 - * Concentration
 - * Accuracy
 - * Neatness

1. Differentiate aims and objectives.

Aims	Objectives
* Aims are very broad and comprehension.	* Objectives are narrower and specific.
* Philosophy, sociology is main source of aims	* Psychology is the main source of objectives
* They are not definite and clear.	* They are definite & clear.
* They are difficult to achieve.	* They can be achieved conveniently.
* Long time duration is needed in order to achieve aims.	* They need short duration i.e., in the period of class room teaching
* They are subjective	* They are objective
* They cannot be evaluated	* They can be evaluated
* These include objectives	* Objectives are a part of aims
* They are related with the whole education and whole curriculum.	* They are related with the teaching and any specific topic.
* It is the responsibility of school, society & nation to achieve them.	* Generally teacher is only responsible.

3. List out the cultural aim of teaching mathematics.

The cultural aims are summarised as follows,
* To enable the learner to appreciate the part played by mathematics in the culture of the past and that it continues to play in the present world.

* To enable the student to appreciate the role played by mathematics in preserving and transmitting our cultural traditions

* To enable him to appreciate various cultural arts like drawing, design making, painting, poetry, music, sculpture and architecture.

* To provide through mathematical ideas, aesthetic and intellectual enjoyment and satisfaction and to give an opportunity for creative expression

* To help the students explore creative fields such as art and architecture.

* To make the learner aware of the strengths and virtues of the culture he has inherited.

* To enable to appreciate the role played by mathematics in cultural tradition

* To provide mathematical ideas, aesthetic, intellectual enjoyment & satisfaction for creative expression.

4. Distinguish between GLO and SLO. Give example for each.

General Instructional objectives	Specific Learning outcomes in terms of students behaviour
* Knowledge of terminology	* The student can define Identify and give reference for specific word and non-verbal symbols
* Knowledge of specific facts	* Here the student has to recall dates, events, persons sources of information
* Knowledge of methods and procedure.	* It involves the methods of inquiry, techniques and procedures employed in a specific subject
* Knowledge of principle and generalisation.	* The pupil can find out ways of particular abstraction
* Knowledge of conventions.	* Pupil can find out ways of dealing with and presenting ideas
* Knowledge of trends and sequences.	* Pupil can outline and state the process, directions and movements of phenomena with respect to time
* Knowledge of classification.	* Pupils can classify different categories, names, sets and dimensions.

2- Explain Revised Blooms Taxonomy (RBT),

* There are six levels of cognitive learning according to the revised version of Bloom's Taxonomy. Each level is conceptually different. The six levels are remembering, understanding, applying, analyzing, evaluating and creating.

* These levels can be helpful in developing learning outcomes because certain verbs are particularly appropriate at each level and not appropriate at other levels.

Remember :-

* Retrieve, recall or recognize relevant knowledge from long-term memory.

* Appropriate learning outcomes verbs for this level include: cite, define, describe, identify, label, list, match, name, outline, quote, recall, report, reproduce, retrieve, show, state, tabulate and tell.

Understand :-

* Demonstrate comprehension through one or more forms of explanation.

* Appropriate learning outcome verbs for this level include: abstract, arrange, articulate, associate, categorize, clarify, distinguish, estimate, exemplify, explain, extend and etc.,

Apply :-

* Use information or a skill in a new situation

* Appropriate learning outcomes verbs for this level include: apply, calculate, carry out, classify, complete, compute, demonstrate, dramatize and etc.,

Analyze:-

* Break material into its constituent parts and determine how the parts relate to one another and/or to an overall structure or purpose

* Appropriate learning outcome verbs for this level include : analyze, arrange, break down, categorize, classify, compare, connect, contract, etc,

Evaluate:-

* Make judgements based on criteria and standards

* Appropriate learning outcome verbs for this level include : appraise, apprise, argue, assess, compare, conclude, consider, contrast, convince, criticize, critique, decide, determine, evaluate, grade and etc,

Create:-

* Put elements together to form a new coherent or functional whole ; reorganize elements into a new pattern or structure.

* Appropriate learning outcome verbs for this level include : arrange, assemble, build, collect, combine, compile, compose, constitute, construct, create, design, develop, plan, prepare, produce etc,

5. Mathematics is mainly taught for its disciplinary values - comment on this statement.

Disciplinary aims:-

In teaching mathematics, aim of teaching is concern it contains with practical aim, disciplinary aim, cultural aim, vocational aim and aesthetical aim.

DATE / /

* Some of the disciplinary aims of teaching mathematics is given below,

* To provide opportunities that enable the learners to exercise and discipline mental faculties

* To help the learner in the intelligent use of reasoning power

* To develop constructive imagination and inventive faculties.

* To develop the character through systematic and orderly habits

* To help the learner to be original and creative in thinking.

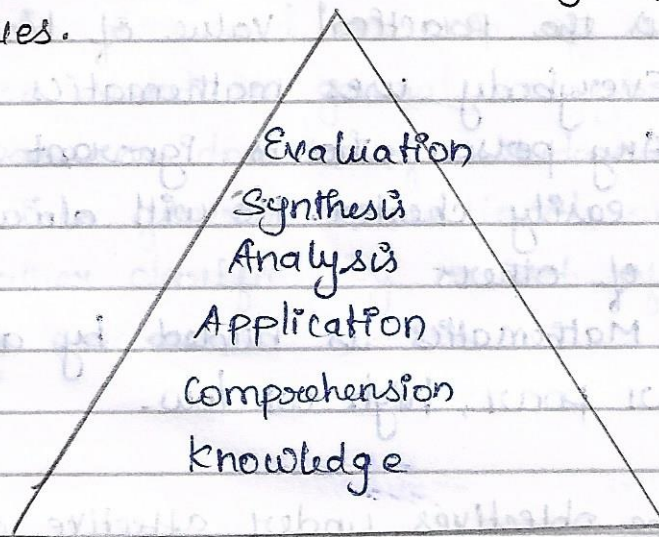
* To help the individual to become self-reliant and independent.

* To develop an ability to grasp a situation, to analyze the situation and to perceive correctly the state of affairs

* To help the members of the society to organise his ideas more logically and express his thoughts more accurately and explicitly

* As mathematical knowledge is exact, logical, real and to that point, it creates discipline in a human mind.

6. Describe the Bloom's Taxonomy of instructional objectives.



Knowledge:-

Recall of information, discovery, observation, listing, location and naming

Comprehension:-

Understanding, translating, summarising, demonstrating, discussing

Application:-

Using and applying knowledge, using problem solving methods, manipulating, designing and experimenting

Analysis:-

Identifying and analyzing patterns, organisation of ideas, recognizing trends

Synthesis:-

Using and Applying knowledge, using problem solving methods, manipulating, designing & experimenting

Evaluation:-

Assessing theories, comparison of ideas, Evaluating outcomes, solving, judging, recommending &

Rating

PART - C

1. What is the practical value of teaching mathematics?
 - * Everybody uses mathematics in their daily life
 - * Any person who is ignorant of mathematics can be easily cheated. He will always be at the mercy of others
 - * Mathematics is needed by all of us whether rich or poor, high or low.

2. List the objectives under affective domain.

- * Receiving
- * Responding
- * Valuing
- * Organisation
- * Characterisation

3. Write the importance of specific mathematics at the secondary level.

The importance of specific mathematics at the secondary level is used to increase ability to choose among lessons and curriculum materials based on the intended mathematical subject matter and the current understandings of the students.

4. Mention the objectives in cognitive domain.

- * Knowledge
- * Comprehension
- * Application
- * Analysis
- * Synthesis
- * Evaluation.

5. Write down general instructional objectives.

* An Intended outcome of instruction that has been stated in general enough terms to encompass a domain of student performance

* This general instructional objective must be further clarified by a set of specific learning outcomes.