

METHODOLOGY OF TEACHING II (BIOLOGY)**Paper IV AS- 2470****Time: 3hrs****Max Marks: 60****Section 'A'**

A1. Words that depict the change in behaviour or depict an action being done are said to be behavioural terms/terminology.

A2. i) Gives us the direction ii) saves time.

A3. Two maxims- Simple to Complex, known to unknown.

A4. Two principles- Principle of co-relation, principle of individual difference.

A5. Joseph Novak.

A6. Demerits- i) Teacher-centered hence most of the times only teacher is active students have less scope to participate, ii) may become monotonous.

A7. Merits- i) gives chance to students to utilize more number of senses ii) based on psychological principles.

A8. Scholastic areas- areas related to school subjects such as Science, Social Science, Math, Hindi, English etc.

A9. Good book- proper organization of content, legible font size and pictorial representation.

A10. Definition- "Measurement refers to observation that can be expressed quantitatively and answers the question how much".

Section 'B'

The answers should cover the points mentioned as under:

A2. **Objectives of Biology teaching:** scientific precision and building of personality of the student are the inherent qualities of the objectives of teaching Biology. Few important objectives are as follows:

- To develop interest towards study of Biology.
- To think and reason scientifically.
- Aversion to superstitions.
- To develop scientific competency.

- To impart knowledge of concepts and principles of Biology.
- Proper utilization of vocation and obtaining recreation.
- Obtaining knowledge of scientific facts and utilizing them in day to day life.
- Identification of problems and developing ability to solve them.
- To develop scientific attitude among students etc.

Difference between general and specific objectives

<i>General</i>	<i>Specific</i>
<ul style="list-style-type: none"> • These are Broad term objectives. • Takes more time to be achieved. • Related to the entire subject. • Gives a broad outline. • Written in general terminology. • Not measurable within the stipulated time. 	<ul style="list-style-type: none"> • These are short term objectives. • Less time consuming. • Related to the topic. • Are very specific. • Written in behavioural terminology. • Measurable within a stipulated time.

A3. Approach of Biology- The NCF 2005 favours following tenets: the learner should get ample chance to explore his intuitive and creative faculties should give chance for multiple reflections, focus is on the students, their interests, learning skills and their needs in a broad sense.

Example: The teacher will take the students out in a near-by garden where s/he would ask the students to **observe** the different kinds of plants, she would then ask the students to classify the plants into three categories namely herbs, shrubs and trees based on the common features/characteristics, she would further ask the students to give the proper justification for keeping the particular plant in a particular category. This will give the student an opportunity to explore his intuitive faculties, autonomy and also for multiple reflections which is the essence of the approach mentioned in NCF2005.

A4. Lecture cum demonstration method: method in which lecture is supported by the demonstration is said to be L-cum-D method. This method is considered to be one of the best method for Biology teaching as Biology is the subject which involves many complex processes. If one, adopts this method to make the child learn the contents of this subject there will be scope for the child to understand the things better and to retain them for a longer period of time.

Example: if one has to teach the topic 'endosmosis' then s/he should explain the process of endosmosis and simultaneously demonstrate the experiment by keeping say for example a raisin in water or a dilute solution and after some time the raisin will swell which will help the students understand the concept of endosmosis better.

A5. Short notes:

- i) **Science club:** a club meant for organizing different science activities, viz., quiz, science fair, excursions etc.

Brief description about the working of science club under the following subheadings

Objectives of a science club:

- To create interest for new advances in science.
- To make students in particular and public in general science oriented.
- To grow cooperation, initiatives and enterprise.
- To create and encourage a healthy competition among pupils.

Organization: (discuss briefly the role of following)

- Patron
- President
- Secretary
- Treasurer

Details of few activities organized by the club.

Botanical gardens: A botanical garden is an establishment where plants are grown for scientific study and display to the public. Botanical gardens play a key role in plant conservation both in *ex situ* conservation and *in situ* conservation.

- Plants' diversity can be conserved and it also allows us to consider restoration and rehabilitation of degraded habitats.
- Living collections of plants species under various groupings, to maintain a living store of genetic diversity that support many activities in conservation and research.
- Seed banks and collections of living plants allow species to be safeguarded.
- Research and development in plant taxonomy and genetics, informing selection of plants that can withstand degraded and changing environments.
- Botanical gardens help in communicating the importance of conserving plants and reaching out to diverse audiences.
- Linking plants with the well-being of people, and also helps in conserving indigenous and local knowledge.
- To encourage the sustainable use of plant resources for the benefit of all, as part of sustainable development.

A6. Measurement

- i) Refers to assigning numbers.
- ii) Quantitative.
- iii) Tells us 'how much'.
- iv) Less time consuming .

Evaluation

- i) Refers to assigning value to those numbers.
- ii) Both quantitative as well as qualitative.
- iii) Tells us 'how better'
- iv) More time consuming.

Achievement test: "an achievement test is essentially a tool or device of measurement that helps in ascertaining quantity and quality of learning attained in a subject of study or group of subjects after a period of instruction by measuring the present ability of the individual concerned".

An achievement test should cover following points:

- Setting of the objectives
- Coverage of the syllabus
- Decision about the types of questions
- Decision about the time
- Preparation of blue print
- Organizing and arranging the questions
- Writing items/questions
- Preparation of a scoring key.

Achievement test for class eighth: give an example of an eighth class question paper.

A7. Bloom's taxonomy: Bloom and his associates have formulated taxonomies of instructional objectives for the cognitive, affective and psychomotor domain, each category is further subdivided into different sub-categories which are mentioned as under:

Cognitive (related with the development of intellectual abilities)	Affective (related with the development of interest, values and application)	Psychomotor (development of motor skills)
<i>Knowledge</i> <i>Understanding</i> <i>application</i> <i>Analysis</i> <i>Synthesis</i> <i>evaluation</i>	<i>Receiving</i> <i>Responding</i> <i>Valuing</i> <i>Organization</i> <i>Characterization by a value/value complex</i>	Perception Set Guided response Mechanism Complex overt response Adaptation origination

(Give a brief description of each domain)

