

**Quadrant-I(e-Text)****Details of Module and its structure**

<b>Module Detail</b>	
<b>Subject Name</b>	<b>Education</b>
<b>Course Name</b>	<b>Assessment for Learning</b>
<b>Course Code</b>	<b>EDU503</b>
<b>Module Name/Title</b>	Construction and Standardization of achievement test: Steps, procedure and uses.
<b>Module Code</b>	<b>AFL009</b>
<b>Pre-requisites</b>	<p>It is assumed that</p> <ul style="list-style-type: none"> <li>Learners are aware of various types of tests taken in the schools to access the knowledge/content mastery of the students.</li> <li>Learners know how to frame instructional objectives as per different levels of thinking mentioned in bloom's taxonomy.</li> </ul>
<b>Learning Outcomes</b>	<p>After going through this lesson, the learners will be able to:</p> <ol style="list-style-type: none"> <li>Define the terms achievement, test and achievement test.</li> <li>Prepare the blueprint of achievement test in the light of instructional objectives and marking scheme.</li> <li>Explain various steps involved in standardization of achievement test.</li> <li>Analyse various uses of achievement test for administrator, teachers and students.</li> </ol>
<b>Keywords</b>	Achievement Test, Construction and standardization, Blueprint of test, Uses of achievement test

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## **1.0 INTRODUCTION**

Construction of the test is not an easy task. It is said that a good test is neither the result of a flash or imagination nor of a few moments of profound thinking. It requires patience, hard work and some knowledge on the part of the investigator.

### **1.1 TEST**

Test is a series of questions on the basis of which some information is sought. In the words of Bean (1953): A test is an organized succession of stimuli designed to measure quantitatively or to evaluate qualitatively some mental process, trait or characteristic.

### **1.2 ACHIEVEMENT**

Achievement is one of the most important goals of education. The dictionary meaning of the word achievement is “a thing somebody has done successfully, especially using his or her own effort and skill.”

**For example**, a student in class IX, can solve 5 varieties of problem relating to reflection and refraction of light successfully but another student can solve only 3 varieties. We can say that the first student has better achievement than in solving problem on reflection and refraction of light. He could achieve more because he had acquired more knowledge, understanding and skills in the concept in solving problems related to reflection and refraction of light in different context than what the second student had acquired during the same time. Academic achievement is, in general, referred to the degree or level of success or proficiency attained in specific area concerning scholastic or academic activity.

### **1.3 ACHIEVEMENT TEST**

Achievement test is a test of knowledge or proficiency which is based on something learnt or taught. The aim of an achievement test is to determine student's knowledge in a specific subject area. Achievement tests measure how well students have mastered the subject matter in a course of instruction (Meagargee, 2000). High scores in achievement test can indicate a mastery of subject content, and also the readiness for next advanced instruction. Low scores in achievement test can indicate the necessity for remediation or repetition of a course grade. In Indian education system, it is used as a tool to measure success of a student in a particular subject or group of subjects. It provides the information about what an individual acquire when his abilities were tested. Achievement test is the instrument which is used to measure the capacities and capabilities of an individual. It is also useful in upgrading the quality of education in an energetic manner.

#### 1.4 EXPERT'S VIEW

According to **Free Man (1984)**, "Achievement test is a test designed to measure knowledge, understanding and skills in a specified subject or a group of subjects".

According to **N.M. Downie (1961)**, "Any test that measures the attainments or accomplishments of an individual after period of training or learning is called achievement test. It helps to permute the student to next class."

According to **Super (1998)**, "An achievement test or proficiency test is used to ascertain what and how much has been learnt or how well a task can be performed".

According to **Waters (1987)**, "Achievement test act as useful aids in diagnosing the student's specific learning needs for identifying his relative strengths and weaknesses".

#### 1.5 CONCEPT : CONSTRUCTION AND STANDARDIZATION OF ACHIEVEMENT TEST

**Construction of the test:** Construction of the achievement test plays an important role in any school or college subject. The construction of a good test requires a good amount of responsibility on the part of the test constructor/ teacher. If a test constructor / teacher determines to prepare a good test, he or she must have clear answer to the following two questions.

- ✓ **"What to measure?"** : It includes certain objectives in view that enables to bring accepted changes in the students behavior when we teach.
- ✓ **"How to measure?"** : It includes how to construct a tool which can measure the abilities of students.

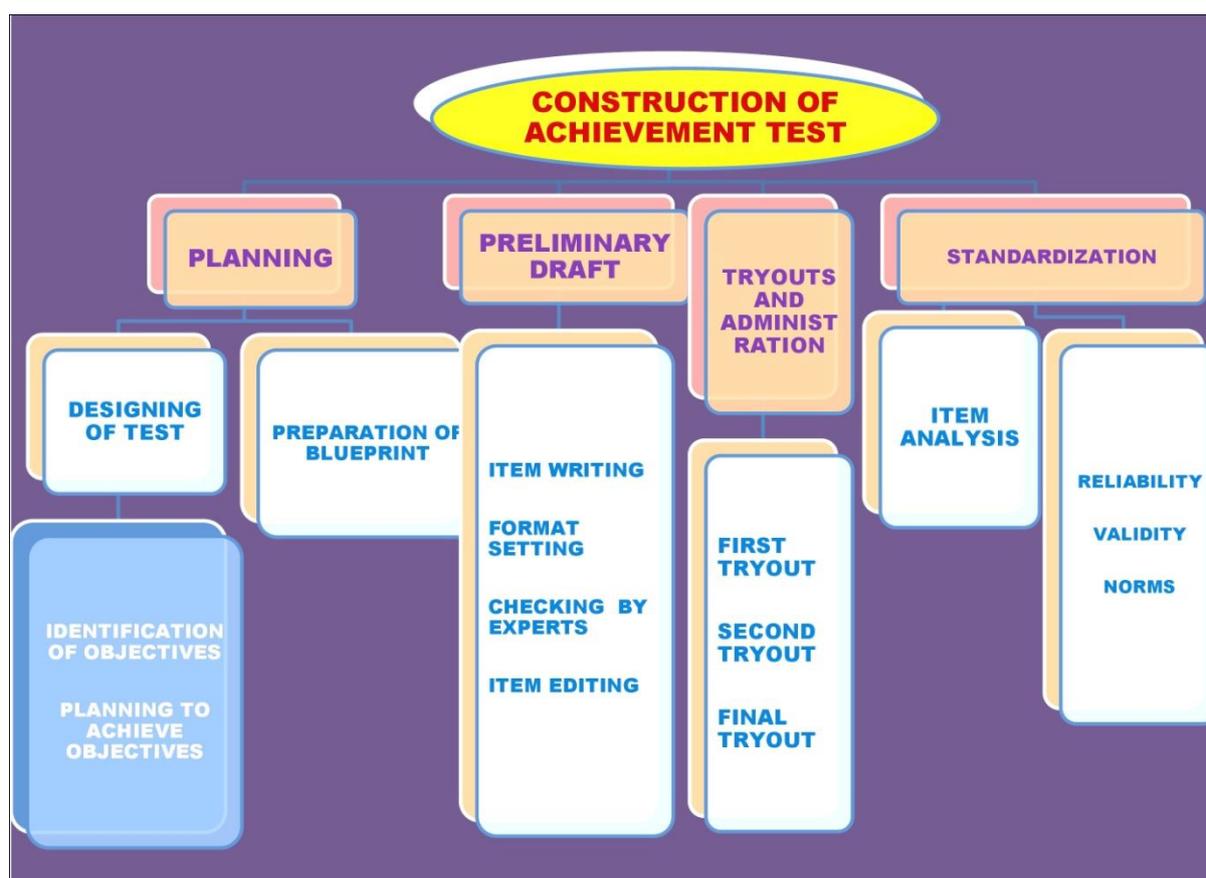
**Standardization:** Standardization means high qualities and deep understanding of subject matter. A standardized test is that in which the procedure, apparatus, and scoring have been fixed so that precisely the same test can be given at different times and places (Lee J. Cronbach, 1984).

**C.V. Good (1972):** A standardized test is a test

- for which content has been selected and checked empirically,
- for which norms have been established,
- for which uniform methods of administering and scoring have been developed and
- which may be scored with a high degree of objectivity.

## 2.0 GENERAL STEPS FOR CONSTRUCTION OF ACHIEVEMENT TEST

Achievement Test is constructed on the basis of the objectives of teaching i.e. knowledge, understanding and application in the particular subject for which it is to be made. Before constructing the Achievement Test, teacher should first review the various standardized achievement tests already available for testing in the field of that particular subject. After reviewing them, the latest syllabus is gone through by teacher. **Fig. 1** represents the steps for construction and standardization of the achievement test.



**FIG 1. : STEPS FOR CONSTRUCTION AND STANDARDIZATION OF THE ACHIEVEMENT TEST**

### 2.1 PLANNING THE TEST

Planning of a test is a first and vital step in the construction of an achievement test. An achievement test demands very systematic and careful planning, as a fact that good planning is a symbol of success. The test constructor must keep some vital aspects in mind such as: subject area, difficulty level, students' type and what, when and how to measure. In this context, following decisions are to be made before hand such as: weightage to the objectives, number of sub tests, proper components of the content to deal with, number and type of items, length of test, allotment of time and marking process etc.

Planning of achievement test will be carried out with following two steps.

**2.1.1. DESIGNING OF THE TEST** Designing is most important step in the construction of a test. Test Constructor should be careful about planning because success of test making will depend upon it. The decision regarding how and what types of questions are to be framed and weightage for different objectives and units in the course must be made very clear. Following points help test constructor to design the test in a systematic way.

**2.1.1a Identification of Objectives :** The primary step in measuring achievement is to make a clear statements of objectives. Objectives in the achievement test are defined in behavioural terms focusing on knowledge, understanding, application and skill, from all the units of the prescribed syllabus of the subject. Objectives are defined by Bloom's Taxonomy and their corresponding action verb are taken by the investigator which are shown in the following figure :

<i><b>OBJECTIVES</b></i>	<i><b>ACTION WORDS</b></i>
<i><b>KNOWLEDGE</b></i>	<i><b>DEFINE, RECOGNIZE, NAMES, STATE, WRITE, EXAMINE, RECALL</b></i>
<i><b>UNDERSTANDING</b></i>	<i><b>IDENTIFY, EXPLAIN, INDICATE, DEMONSTRATE, CONVERT</b></i>
<i><b>APPLICATION</b></i>	<i><b>CHOOSE, CHANGE, FIND, ILLUSTRATE</b></i>
<i><b>SKILL</b></i>	<i><b>SELECT, SEPARATE, REPLACE, INTEGRATE, COMBINE, DRAW</b></i>

**Fig 2: Objectives and their corresponding action verbs as defined in Bloom's Taxonomy**

**2.1.1b.Planning to achieve the Objectives** After stating the objectives, the teacher proceeds with the construction of a test, so that the achievement of these stated objectives can be measured. The teacher while planning the test will consider the following aspects:Sections/ Units in the achievement test

- Scheme of options so that emphasis can be given on each subject and area of question

- Weightage to objectives which means selection of objectives and allotting marks to each.
- Weightage to different areas of content
- Weightage to different forms of Questions(i.e. essay type, short answer, objective type)
- Allotment of time

### 2.1.2 PREPARATION OF BLUE PRINT

The last step of test planning is the preparation of blueprint. It acts as a guide for writing items for preliminary draft. Test constructor sets various types of questions in blueprint and allots them marks depending on the time. The test constructor describes his criteria of achievement test in the form of a three dimensional table known as blueprint. So blue print is a three-way grid, with the content spreads along the vertical axis and the objectives to be tested along the horizontal axis. The three dimensional chart includes:

- Objectives to be tested
- Subject matter to be covered
- The form of questions

<b>FORMAT OF A BLUEPRINT</b>													
<b>Objective</b>	<b>Knowledge</b>			<b>Understanding</b>			<b>Application</b>			<b>Skill</b>			<b>Total</b>
<b>Form of Questions</b>	<b>E</b>	<b>S</b>	<b>O</b>	<b>E</b>	<b>S</b>	<b>O</b>	<b>E</b>	<b>S</b>	<b>O</b>	<b>E</b>	<b>S</b>	<b>O</b>	
<b>Sub Unit1</b>	0	2(2)	1(2)										6
<b>Sub Unit2</b>				5(1)	2(1)			2(1)		1(1)			10
<b>Sub Unit3</b>				5(1)	2(1)						2(1)		9
<b>Total</b>	0	4	2	10	4	0	0	2	0	1	2	0	25

**FIG 3: FORMAT OF A BLUEPRINT**

**E – Essay type Question    S – Short Type Questions    O – Objective Type Questions**

Figures within the brackets indicate the number of questions and figures outside the brackets indicates marks.

### 2.2 PRELIMINARY DRAFT

After planning, the next step is to prepare preliminary draft and designing of questions corresponding to the blueprint. It includes:

- Defining the objectives
- Changing the objectives to specifications

- Mastery over the subject matter

Preliminary draft is prepared through following stages.

**2.2.1 ITEM WRITING:** Blue print acts as a guide for writing the draft. Test conductor while writing the items in preliminary draft, considers the following aspects as priority points.

- Each item in draft should be corresponding to the framed objective.
- Questions must be simple, clear and easy to understand.
- Avoidance of Ambiguous statements.
- Items should be sequenced from simple to complex

**2.2.2 Format of Test :** It includes

- **Sequencing the questions** on the basis of their types e.g. Section A-Objective type, Section B-Short Answer, Section C-Essay Type
- **General Instructions to the students** are given at the starting of the question paper.
- **Instructions to teachers:** This facilitates them in objective checking and scoring.

**2.2.3 Item Checking by Experts :** All the items are evaluated by the experts like subject experts, language experts and any experienced faculty member of institution as well as by the teacher himself in order to modify the draft in terms of vagueness, ambiguous terms and language difficulty. Language teacher will check the errors and defects in language or words. Thus experts will check the level of items corresponding to stated objectives.

**2.2.4 Item editing:** Then the items of the test are edited and reviewed as per the suggestions given by experts. The suggestions are incorporated and defects are removed.

### **2.3. TRYOUTS AND ADMINISTRATION OF THE TEST**

The main operation of achievement test is measured when it is implemented on the students. Poor planning of the administrative process can lead to fake result. That's why after preparing a preliminary draft, it is subjected to tryouts.

#### **2.3.1. FIRST TRY OUT**

After finalizing, the test items are administered on few students (approximately 5) for individual try-out. Test constructor must be sure about the practicability of the test. The draft is modified on the basis of feedback given or problem faced by students. It can be identified as difficulty in identifying or understanding of any particular word/words, any difficulty to attempt the questions under allotted marks, incorrect numbering,

misleading statements, grammatical errors etc. Total time taken by students to complete the paper is also noted.

### **2.3.2. SECOND TRY OUT/ PILOT STUDY**

To inquire the proper operating of test items and to get rid of shortcomings, it is essential to have second try out of items on atleast sample of 30 to 40 students. Following aspects are considered while testing in sample.

- Proper sitting arrangements.
- Total time required for test completion.
- Proper motivation of students.

This helps to predict that how students will work in actual practices. At this try out stage, the test should be so timed that approximately 90% of the students should be able to attempt the complete test. There is no time limit and the time taken by every student is noted down. A final marking scheme is prepared for the short and essay type questions and a scoring key is also prepared for the objective questions. Marking scheme is necessary to prepare as it indicates

- The number of steps or points expected in the answer
- The content framework of expected answer
- The Weightage to each of these steps or points

### **2.3.3. FINAL TRYOUT**

The test is administered to 100 students of class within allotted time. This tryout is administered to find out the language problem and the difficulty level. Separate answer sheets are provided to all the pupils and the required instructions about the test are given. The students are supposed to mark the right answer on the sheets. The test sheets along with answer sheets are collected and answer sheets are used for scoring with the help of scoring key.

## **2.4 STANDARDIZATION OF THE TEST**

**2.4.1. ITEM ANALYSIS:** The test is evaluated with the help of scoring key. It is assumed that the test was very easy for the class, if the scores seem extremely high. Similarly, the test was probably very difficult if the scores are very low It is advisable to review the question paper in following steps:

- Question wise analysis -before the test
- Critical evaluation of the test -before the test
- Item analysis -after the test
- Preparation for Final Draft

**Question wise analysis** helps to find out the weakness and strength of the test; to relate the question paper with the blueprint; and to inquire the content validity of the test. Each question is analyzed according to the objective specification, topic, question form and type, estimated difficulty level, time needed, and marks allotted.

**Critical evaluation** of the test helps to bring out any replication, spelling errors, ambiguities in the paper. A qualitative and quantitative assessment of the test must be done.

**Item analysis** enables the teacher to determine the difficulty value of each item; the discriminating power of each item; and the effectiveness of distracters in the given item.

**Preparation for Final Draft** : Test constructor analyses the responses of students for each test item. The whole data is gone through a statistical procedure. For the final draft, appropriate items are selected and inappropriate items are removed. A systematic arrangement of questions is done in the final draft, so that a clear identity of test is appeared. A final look of test is given by mentioning instructions to attempt the test, time allotment and responder's particular filling spaces or boxes at the top.

#### **2.4.2. ESTABLISHMENT OF RELIABILITY, VALIDITY AND NORMS**

The last stage is the establishment of validity, reliability and norms by administering the test items to a larger sample.

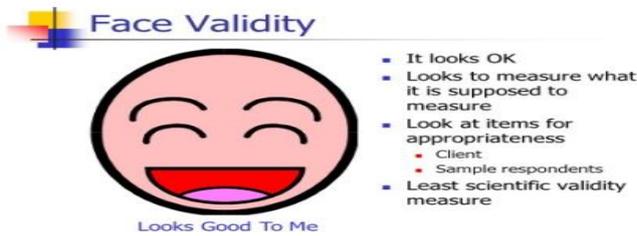
**2.4.2a. RELIABILITY OF THE TEST:** Reliability refers to consistency. Similar marks obtained by an individual when re-examined with same test on different times. There are a number of methods available for finding out the reliability of a test and the most successful methods for finding the reliability of an achievement test are Test-Retest and Split-half method.

- **Test- Rest Method:** The test is conducted to a group of students and is re-conducted to the same group of students after fifteen days and two sets of scores are correlated.
- **Split Half Method:** The test is split into two equal parts ( for even/odd pattern) and then both parts given to group of students at the same time. The scores from both sets of the test are correlated.

**2.4.2b. Validity:** Validity refers to the attainment of purpose for which the test is prepared. Validity is of following type.

- **Face Validity:** Face validity refers to the transparency or relevance of a test as it appears to test participants. A test can be said to have face validity if it "looks like" it is going to measure what it is supposed to measure. For example, if a test is constructed to measure whether students can perform multiplication, and the persons to whom it is

shown all agree that it looks like a good test of multiplication ability, this depicts face validity of the test.



**FIG 4: FACE VALIDITY**

**Content Validity:** The content validity is related with the relevance of the content. The achievement test is given to subject teachers and experts of field to compare test items with the content and objectives. They are asked to provide feedback on how well each question measures the construct in the question. Their feedback is then analyzed, and decisions can be made about the effectiveness of each question. Lawshe (1975) proposed that each of the expert on the judging panel respond to the following question for each item: "Is the skill or knowledge measured by this item 'essential,' 'useful, but not essential,' or 'not necessary'?" If more than half the panelists agrees that an item is essential, that item has at least some content validity. Greater levels of content validity exist if larger numbers of panelists agree for a particular item as essential.

**Construct validity:** If a test correctly measures a theoretical, non-observable construct or trait, it is said to be have construct validity. e.g. a test shows a high correlation value with another test which also measures the same construct.

**Predictive Validity:** It refers to the degree to which a test can predict the future success or failure of the test takers. In order to find predictive validity, the tester correlates the test scores with testee's subsequent performance

**2.4.2c. Norms:** Average score of sample population is called as Norms. This is the standard level which is set by a particular group of individuals on a test. These are of many types such as age norms, grade norms, percentile norms and standard scores etc.

### 3.0 EXAMPLE OF ACHIEVEMENT TEST CONSTRUCTION

**ACHIEVEMENT TEST**

**LIFE SCIENCE**

Name of the Teacher : ABCD  
 Name of the School : XYZ School  
 Standard : VIII  
 Date: -----

Mark: 50  
Time : 2 hrs

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**SECTION - A**

**I. Choose the Correct Answer and mark tick (✓) on it. 1x20=20**

1. *Which of the following element does not determine the weather?*  
 a. temperature    b. Rainfall    c. humidity    d. photosynthesis
2. *Which of the following is not water saving feature / habit?*  
 a. low flow toilets    b. low flow shower heads  
 c. rainwater catchment system    d. instant water heaters on sink
3. *A vertical section through different layers of soil is called \_\_\_\_\_*  
 a. Horizon    b. soil profile    c. terracing    d. weathering
4. *Dirty water can be recycled. It can thus be \_\_\_\_\_*  
 a. Reused    b. discarded    c. thrown into rivers    d. thrown into oceans
5. *Mohan takes 100g soil and allow it to dry for two hours. After drying, soil is weighed. It loses 10g. Calculate the percentage of moisture in soil*  
 a. 20%    b. 10%    c. 60%    d. 5%
6. *If you recycle one ton of paper, how many trees you can save?*  
 a) One    b) Nine    c) Thirty-five    d) One Hundred
7. *Which is the main causative factor for desertification?*  
 a) Irrigated Agriculture    b) Overgrazing    c) Tourism    d) Developmental Activities
8. *Which of the following region has maximum diversity*  
 a) Mangroves    b) temperate rainforests    c) taiga    d) Coral reefs
9. *A place receives very high rainfall and the temperature remains above 25 degree C throughout the year, what will the climate of that place?*  
 a. Hot & Dry    b. Wet & Hot    c. Cold & Wet    d. Cold & Dry
10. \_\_\_\_\_ and \_\_\_\_\_ are the parts of India where tropical rainforest climate is found.  
 a. Western Ghats    b. Assam    c. Both a and b    d None of these

**II FILL IN THE BLANKS**

- 11) *Dissolved and suspended impurities in sewage water are called as \_\_\_\_\_.*
- 12) *Hot and dry climate best describe a \_\_\_\_\_ region*
- 13) *Three forms of water in water cycle are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.*
- 14) *All the changes in weather depends upon the distance of \_\_\_\_\_ from the earth.*
- 15) *Left over food should be used for \_\_\_\_\_.*

**Fig. 5 : Sample Achievement test on Biology for class VII**

## III MATCH THE FOLLOWING

16	A community of organisms where there are several interrelated food chains	Habitat
17	Loss of top layer of soil by wind or water	Biodiversity
18	The average weather taken over a long period of time	Weather
19	A place where living organisms live, survive and reproduce	Food web
20	A variety of living beings in a habitat	Climate

SECTION -B

## V ANSWER THE FOLLOWING

2 X 10 =20

1. Make a graph along 'x' axis and 'Y' axis showing the variation of maximum temperature during 03 to 09 August by using the following information.

DATE	Max. temperature
08-08-09	26°C
04-08-09	23.5°C
05-08-09	25°C
06-08-09	22°C
07-08-09	25.5 °C
08-08-09	23.5°C
09-08-09	24.4°C

- Why days are longer in summers and comparatively shorter in winter?
- Which soil is the best for plant growth and why?
- Define the term Condensation.
- Enumerate the special features of long tailed monkey which help it to survive in extreme hot and humid conditions.
- Give some examples of tropical forest animals.
- There are 10 tube wells in a lane of 50 houses. What could be the long term impact on the water table?
- Enlist the waste material from your surroundings that can not be recycled.
- Why does Air above the soil seem shimmer in summer days?
- Draw a well labeled diagram of water cycle.

## Section - C

## VI ANSWER IN DETAILS

2 x 5 =10

- What do you mean by deforestation? Explain the various methods to prevent soil erosion?
- Explain various types of food web with examples

**Fig. 6: Sample Achievement Test on Biology for Class VII**

<b>BLUE PRINT OF ACHIEVEMENT TEST</b>													
OBJECTIVE	KNOWLEDGE			UNDERSTANDING			APPLICATION			SKILL			TOTAL
FORM OF QUESTIONS	E	S	O	E	S	O	E	S	O	E	S	O	
<i>Unit 1- Weather and Climate</i>	--	--	1(3)	--	2(1)	1(2)	--	2(1)	1(1)	--	2(1)	--	12
<i>Unit 2 – Biodiversity</i>	--	2(2)	1(3)	--	--	--	5(1)	2(1)	--	--	--	--	14
<i>Unit 3- Soil Profile and Soil Erosion</i>	--	--	1(2)	5(1)	2(1)	1(2)	--	--	--	--	--	1(1)	12
<i>Unit 4_ Recycling</i>	--	2(2)	1(2)	--	--	1(1)	--	--	1(2)	--	2(1)	1(1)	12
<b>Total</b>	0	8	10	5	4	5	5	4	3	--	4	2	<b>50</b>

**Fig. 7: Blue Print of Sample Achievement Test on Biology of Class VII**

<b>WEIGHTAGE TO OBJECTIVES</b>			
S.No	Objectives	Marks	Percentage
1	Knowledge	18	36
2	Understanding	14	28
3	Application	12	24
4	Skill	6	12
	<b>Total</b>	<b>50</b>	<b>100</b>

**Fig 8 : Objective Weigtage Chart of Sample Achievement Test on Biology**

<b>WEIGHTAGE TO CONTENT</b>			
<b>S.No</b>	<b>Content</b>	<b>Marks</b>	<b>Percentage</b>
1	Weather and its Elements	12	24
2	Biodiversity	14	28
3	Soil Profile and Soil Erosion	12	24
4	Recycling	12	24
	<b>Total</b>	<b>50</b>	<b>100</b>

**Fig 9 : Content Weightage Chart of Sample Achievement Test on Biology**

<b>WEIGHTAGE TO DIFFICULTY LEVEL</b>			
<b>S.No</b>	<b>Forms</b>	<b>Marks</b>	<b>Percentage</b>
1	Easy	10	20
2	Average	30	60
3	Difficulty	10	20
	<b>Total</b>	<b>50</b>	<b>100</b>

**Fig 10 : Difficulty Level Weightage Chart of Sample Achievement Test on Biology**

<b>WEIGHTAGE TO FORM OF QUESTIONS</b>			
<b>S.No</b>	<b>Question Type</b>	<b>Marks</b>	<b>Percentage</b>
1	Objective	20	40
2	Short Answer	20	40
3	Essay	10	20
	<b>Total</b>	<b>50</b>	<b>100</b>

**Fig 11 : Question Form Weightage Chart of Sample Achievement Test on Biology**

ITEM ANALYSIS					
S.NO	CONTENT	OBJECTIVE	FORMS OF QUESTION	DIFFERENT LEVEL	MARK
<b>PART-A</b>					
1	WEATHER & CLIMATE	Knowledge	Objective	Easy	1
2	RECYCLING	Understanding	Objective	Easy	1
3	SOIL PROFILE & SOIL EROSION	Knowledge	Objective	Easy	1
4	RECYCLING	Application	Objective	Average	1
5	SOIL PROFILE & SOIL EROSION	Skill	Objective	Average	1
6	RECYCLING	Skill	Objective	Difficult	1
7	SOIL PROFILE & SOIL EROSION	Understanding	Objective	Easy	1
8	BIODIVERSITY	Knowledge	Objective	Average	1
9	WEATHER & CLIMATE	understanding	Objective	Average	1
10	WEATHER & CLIMATE	Knowledge	Objective	Average	1
11	RECYCLING	Knowledge	Objective	Easy	1
12	WEATHER & CLIMATE	Understanding	Objective	Average	1
13	RECYCLING	Knowledge	Objective	Average	1
14	WEATHER & CLIMATE	Knowledge	Objective	Average	1
15	RECYCLING	Application	Objective	Easy	1
16	BIODIVERSITY	Knowledge	Objective	Average	1
17	SOIL PROFILE & SOIL EROSION	Knowledge	Objective	Average	1
18	WEATHER & CLIMATE	Knowledge	Objective	Easy	1
19	BIODIVERSITY	Knowledge	Objective	Average	1
20	BIODIVERSITY	Knowledge	Objective	Easy	1
<b>PART-B</b>					
1.	WEATHER & CLIMATE	Skill	Short Ans	Difficult	2
2	WEATHER & CLIMATE	Application	Short Ans	Average	2
3	SOIL PROFILE & SOIL EROSION	Understanding	Short Ans	Average	2
4	RECYCLING	Knowledge	Short Ans	Average	2
5	BIODIVERSITY	Knowledge	Short Ans	Easy	2
6	BIODIVERSITY	Application	Short Ans	Average	2
7	RECYCLING	Application	Short Ans	Average	2
8	RECYCLING	Knowledge	Short Ans	Average	2
9	WEATHER & CLIMATE	Understanding	Short Ans	Average	2
10	RECYCLING	Skill	Short Ans	Difficult	2
<b>PART-C</b>					
1	SOIL PROFILE & SOIL EROSION	Understanding	Essay	Average	5
2	BIODIVERSITY	Application	Essay	Difficult	5

**Fig 12 : Item Analysis Chart of Sample Achievement Test on Biology of Class VII**

There are different methods of estimating validity such as face validity, content validity, construct validity, predictive validity and concurrent validity. The investigator opted for content validity. In which expert judgment was taken into consideration. To estimate content validity of an achievement test, test was given to four Biology teachers, two language teachers and two life science teacher educators to compare test items with the content and objectives of content. The experts agreed with the investigator with the distribution of content and objective of the content as well as with the scoring scheme. In this way content validity of the achievement test was established.

**Fig 13: Validity of Sample Achievement Test on Biology**

#### 4.0 USES OF ACHIEVEMENT TEST

It can be discussed in following three areas

##### 4.1 USES OF ACHIEVEMENT TEST FOR ADMINISTRATORS

- **Allocation of Resources:** Educational administrators often use standardized achievement test results in deciding how to allocate resources.
- **Decision of special funding and tutorial sessions:** Test result helps administrators to take decision about special funding to support staff development activities and after-school tutorial sessions for low-performing students.
- **Classification of School Objectives:** In the light of results of achievement test, administrators can classify school objectives accordingly.
- **Evaluation of Educational Objectives:** Achievement Test helps the administrators to know the extent with which the objectives of education have been achieved.
- **Improvement of Curriculum:** It helps the administrators to evaluate, revise and modify the curriculum on the basis of obtained results.
- **Discovery of Better Learning Experience:** It helps to discover the type of learning experiences which can help to achieve the objectives with the best possible results.
- **Selection of talented Students:** Talented pupils for special classes and courses can be selected.

- **Transparency and Objectivity:** Students for the award of special merits or scholarships can be identified with full transparency and objectively.
- **Arrangement of Remedial classes:** Proper planning and arrangements of remedial classes can be made after discovering backward children who need help in specific area.
- **Classification of Students:** Wise decisions can be taken for proper classification of students according to their level of achievement.
- **Reduction of variations within a group:** It helps to group students in a class, so that they will be put in such a way that individual differences are as little as possible.
- **Judgment of teaching efficiency:** Teaching efficiency of the teacher can be judged by determining the general level of achievement of a class. The level of achievement of a class can be determined by seeking the achievement of the class in the beginning and at the end of the school year.
- **Judgment about school efficiency:** The efficiency of one school with the others can be determined.
- **Guidance to Parents:** The scores obtained in achievement test help the parents in recognizing the strengths and weaknesses of their children so that they can put efforts on suitable goals only and don't put heavy demands on them.

#### 4.2. USES OF ACHIEVEMENT TEST FOR TEACHERS

- **Selection of strategy of teaching:** The teacher will come to know the general range of abilities of students in the class and in the light of this; he will select appropriate strategy of teaching, so that all students get benefit from instruction to the maximum.
- **Diagnosis of weakness and strength:** By determining and diagnosing the weakness and strength of the students in various subjects, teacher can spot brilliant and backward children.
- **Determination of progress of students:** He will determine the progress of the group in a particular subject over a period of time.
- **Help in judgment:** Results of the students on achievement tests helps the teacher to know whether the students are performing at their maximum capability or not.

- **Identification of different category of students:** Achievement test are designed to identify the students of different categories such as slow learners, gifted and average students etc. as result of which the teachers would be able to provide remedial instruction and enrichment programme for the students.
- **Classification of students:** Achievement tests are helpful for the purpose of identifying and classifying the students in the various groups on the basis of their achievement merits.
- **Preparation for competitions:** Achievement tests are helpful for the teachers to enable them to know strength and weaknesses of students in different subjects and skill as a result of which the teacher can be able to prepare their students for different competitions of different subjects or courses.
- **Better understanding of students:** Achievement test is an effective tool to understanding the needs and abilities of students in a better way.

#### 4.3. USES OF ACHIEVEMENT TEST FOR STUDENTS

- **Promotion to next class:** Achievement tests are intended to give promotion to the pupils to the next higher classes or new courses considering the obtained result as a yard stick for promotion of the structures.
- **Choice of subject:** Achievement tests are useful in helping students to choose suitable subjects or courses according to their achievement levels.
- **Hint of Aptitude:** Achievement test results give hint to students about their aptitude because it presents standard of the students in a subject or subjects.

#### 5.0 SUMMARY :

- Achievement tests measures how well students have mastered the subject matter in a course of instruction.
- Achievement Test is prepared in the light of the objectives of teaching; knowledge, understanding, application and skill in the particular subject.

- Main Steps taken for construction and standardization of the achievement test are: 1. Planning of test 2. Preparation of preliminary draft 3. Tryouts and Administration of test 4. Standardization of test
- Planning includes designing of test and preparation of blue print of test.
- Preliminary draft is prepared by item writing, format setting, item checking by experts and item editing.
- There of three tryouts are practiced for the construction of test: First, Second and Final Tryout.
- Standardization of test includes item analysis and establishment of reliability, validity and norm settings.
- Achievement test results help administrators to take decisions and to make arrangements according to the level of students.
- Teachers can categorize students according to their achievements in test and can make various groups of students so that suitable teaching strategy can be used for instructions.
- Students can identify their aptitude and subject of their choice. Promotion to next class is also done by considering the results of achievement test.

### **Quadrant-III - (Learn More / Web Resources / Supplementary Materials):**

Books, articles, research papers, journals, case studies etc.:

- Cronbach, Lee J. (1984). *Essentials of Psychological Testing, (4th ed.)*, New York :Harper and Raw Publishers Inc.
- Downie, N. M. (1961). *Fundamentals of measurement*. Oxford University Press, New York
- Freeman, R.E. (1984). *Strategic Management: A stakeholder Approach*. Boston, MA: Pitman.
- Good, C. V. (1972). *Essentials of Educational Research*. New York: Appleton Century Crofts, Meredith Corporation.
- Jeevamani,V. and Sivakumar,D. (2017). Impact of mobile phone usage on academic achievement of mathematics students. *Edutrack*,16(5), 47.
- Nanda,S.K. (2012). *Learning Resources and Assessment of Learning*. Ludhiana: Vinod Publications.
- Sekhri, A. (2016). Construction and Standardization of Achievement test in chemistry of Class IX. *ResearchGate*, Retrieved From [https://www.researchgate.net/publication/305451040\\_Construction\\_and\\_Standardisation\\_of\\_Achievement\\_Test\\_in\\_Chemistry\\_of\\_Class\\_IX](https://www.researchgate.net/publication/305451040_Construction_and_Standardisation_of_Achievement_Test_in_Chemistry_of_Class_IX) .

- Singh, A. K. (2011). Principles of measurement. In B. Bhawan (Ed.), *Tests, Measurements and Research Methods in Behavioural Sciences* (pp. 155-157). Patna: B. B. Printers.
- Super, S. (1998). *Dictionary of Psychology*, Anmol Publications Pvt. Ltd. New Delhi.
- Upadhyay, H. P. (2001). *Effect of constructivism on mathematics achievement of grade V students in Nepal*. Unpublished Doctoral Dissertation, Panjab University, Chandigarh.
- Walia, J.S. (2011). *Learning Resources and Assessment of Learning*. Jalandhar: Ahim Paul Publishers.
- Waters, A. (1987). *English for Specific Purposes*. New York: Cambridge University Press.
- Young, B .J., & Lee,S. K. (2005). The effects of a kit-based science curriculum and intensive science professional development on elementary student science achievement. *Journal of Science Education and Technology*, 14 (5/6), 471-481. Retrieved from <http://www.jstor.org/stable/40186728>

Links to web sites giving additional readings, Wikipedia, blogs, open source content etc.:

<http://bachelorofeducationindia.blogspot.com/2012/05/achievement-test.html>

<http://sathitech.blogspot.com/2009/03/construction-of-achievement-test.html>

<http://gsamutha.blogspot.com/2013/11/constructionof-good-achievement-test.html>

<http://www.educationjournal.org/download/298/2-5-108-853.pdf>

[https://learn.org/articles/What\\_are\\_Academic\\_Achievement\\_Tests.html](https://learn.org/articles/What_are_Academic_Achievement_Tests.html)

<https://www.youtube.com/watch?v=jwJndVFeRZU>

[https://learn.org/articles/What\\_are\\_Academic\\_Achievement\\_Tests.html](https://learn.org/articles/What_are_Academic_Achievement_Tests.html)

<http://www.sciedu.ca/journal/index.php/wje/article/download/4534/2616>

<https://slideplayer.com/slide/221404/1/images/4/Face+Validity+It+looks+OK.jpg>

#### Quadrant-IV: (Self-Assessment)

1. If a teacher determines to prepare a good achievement test, he must have clear answer to the question/s.
  - a. What to measure? and How to measure?
  - b. What to diagnose? and How to diagnose?
  - c. What is the strength and weakness of students?
  - d. What is the ability and interestof students?

2. Low achievement scores of a child can indicate the need for
  - a. Remediation or Repeating a course grade
  - b. Psychiatrist help
  - c. Shifting the child to boarding school
  - d. All correct**
  
3. The test constructor writes down his decisions of achievement test in the form of a three dimensional table of specifications. It is called as \_\_\_\_\_.
  - a. Preliminary draft
  - b. Question Paper
  - c. Blueprint
  - d. Item Analysis
  
4. After preparing the blueprint, the next step in test construction is to prepare \_\_\_\_\_
  - a. Final Draft
  - b. Draft for Pilot Study
  - c. Preliminary Draft
  - d. Standardized Draft
  
5. **The other name of Pilot study is \_\_\_\_\_**
  - a. First tryout
  - b. Second try out
  - c. Final tryout
  - d. Individual tryout
  
6. **Critical evaluation of the test helps to weed out \_\_\_\_\_ that may exist in the paper.**
  - a. Duplication
  - b. Spelling mistakes
  - c. Ambiguities
  - d. All
  
7. What does help the test constructor in determining the difficulty value, the discriminating power and the effectiveness of distracters in the given item.
  - a. Item editing
  - b. Item writing
  - c. Item checking
  - d. Item analysis
  
8. Which of the following is the final step in the construction and standardization of an achievement test
  - a. Establishment of Reliability, Validity and Norms.

- b. Preparation of blueprint
  - c. Final Tryout
  - d. Item Analysis
9. The most appropriate methods for computing reliability of achievement test are
- a. Test-Retest and Split-half method
  - b. Construct Validity
  - c. Determination of Discriminating Power
  - d. Norm Setting
10. If a test is prepared to measure whether students can perform multiplication, and the people to whom it is shown all agree that it looks like a good test of multiplication ability, this demonstrates \_\_\_\_\_ validity of the test.
- a. Predictive
  - b. Construct
  - c. Content
  - d. Face
11. Which of the following is not a characteristic of a good achievement test?
- a. Reliability
  - b. Objectivity
  - c. Ambiguity
  - d. Validity
12. Which test is intended to give promotion to the pupils to the next higher classes or new courses considering the obtained result as a yard stick for promotion of the structures.
- a. Diagnostic Test
  - b. Achievement Test
  - c. Ability Test
  - d. Intelligent Test
13. Correct step sequencing for construction and standardization of an achievement test is:
- a. 1. Planning of Test by designing and preparing blueprint  
2. Preparation of Preliminary Draft  
3. Tryouts and Administration  
4. Standardization by Item analysis and Establishing reliability and Validity
  - b. 1. Preparation of Preliminary Draft  
2. Planning of Test by designing and preparing blueprint  
3. Tryouts and Administration

4. Standardization by Item analysis and Establishing reliability and Validity
- c. 1. Planning of Test by designing and preparing blueprint  
2. Standardization by Item analysis and Establishing reliability and Validity  
3. Preparation of Preliminary Draft  
4. Tryouts and Administration
- d. 1. Planning of Test by designing and preparing blueprint  
2. Tryouts and Administration  
3. Preparation of Preliminary Draft  
4. Standardization by Item analysis and Establishing reliability and Validity
- 14. A standardized test is one in which the procedure, apparatus, and scoring have been fixed so that precisely \_\_\_\_\_**
- a. the different tests can be given at different times and places  
b. the same test can be given at same time and place  
c. the same test can be given at different times and places  
d. the different test can be given at same time and place
15. When a test is administered to a group of students and is re-administered to the same group of students after fifteen days and two sets of scores are found to be correlated. It shows which type of reliability of test?
- a. Split Half  
b. Test-Retest  
c. Parallel  
d. Concurrent

Scoring Key :

1	a
2	a
3	c
4	c
5	b
6	d
7	d
8	a
9	a
10	d
11	c
12	b
13	a
14	c
15	b