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**STUDY MATERIAL**  
**MEMORY, FORGETTING ATTENTION, INTEREST**

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**Memory: Meaning and Definitions**

Memory is a mental process of storing impressions of past experiences and then recalling or reactivating them in the conscious mind. It comprises leaning, retention, recall and recognition.

Different psychologists have defined memory in different ways. Some of them are

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- James S. Ross defined, "A memory is a new experience determined by the deposits laid down by a previous experience.'
- Morris, C.G defined that- "Memory is a process by which learned material is retained."
- **G. F. Stout** in his book "**A Manual of Psychology**" has stated, "Memory is the ideal revival, so far as field revival is merely reproductive in which the objects of past experience are reinstated as far as possible in the order and manner of their original occurrence."
- **Spearman** defined memory as, "Cognitive events by occurring established dispositions which facilitate their recurrence."
- James **Drever** in his book "**Dictionary of Psychology**" stated that - "Memory is that characteristics of living organism by virtue of which the past experiences modify the future experiences and behavior."
- **William James** defined – Memory is posse of retentiveness and its quality depends on one's brain structure.
- According to **Hilgard and Atkinson**, "To remember means to know in present response some signs of earlier learned responses."

**Stages of Memory**

Memory is a complex process whereby we revive our past experiences. It is the reproduction of the past experiences. It is the store house of our knowledge and experiences. Thus we can say that-Memory originates from learning. Memory reproduces the past experiences. The stages of Memory are-

- i) **Encoding (or registration):** Encoding is the first stage of memory. It is the process of receiving, processing, and combining information. Encoding allows information from the outside world to reach our senses in the forms of chemical and physical stimuli. This is the stage of memory which accumulates all the information from the surrounding and encodes or stores it in our brain.
- ii). **Storage:** It is the creation of a permanent record of the encoded information. Storage is the second memory stage or process in which we maintain information over periods of time. This stage deals with nature of the memory where the information is stored, time duration of the memory, the amount of information that can be stored, and type of memory.
- iii) **Retrieval (or recall, or recognition):** It is the calling back of stored information in response to some cue for use in a process or activity. Retrieval refers to retrieving information out of our memory storage. Failure to retrieve information is often understood as not being able to remember or recall the particular information. We must locate it and return it to our consciousness. Some retrieval attempts may be effortless due to the type of information.

### **Marks of Good Memory**

It is often observed that even in simple day-to-day activities or in complex activities like writing a test, some people can remember most of learnt material than others and in definite detail, then they are said to have good memory. According to Stout, the marks of good memory are ease and rapidity of learning or memorizing, permanence of retention, rapidity of actual revival, accuracy of the actual recall, or and serviceableness of the revival or its relevance to purpose. Good memory has certain characteristics. These are given below

- 1) **Rapidity and Quick:** When a person possessing good memory should be able to learn easily and rapidly, conserve it in mind, recall it promptly when it is required. He is capable of relating the new material to one learnt earlier.
- (2) **Amount of materials:** Another mark of good memory is when a person can retain maximum amount of learnt material in his mind. Such a person can recall a material exactly.
- (3) **Easy reproduction:** Another sign of good memory is easy recall. The capacity to bring forth the image or language for use in the present situation; in other words, easy reproduction of a learnt material to achieve a specific purpose.
- (4) **Promptness and accuracy:** Promptness and accuracy of recall is another mark of good memory. When a person is able to remember a material within a very short time it said to be the person possess a good memory.

(5) **Length of time:** The power of retaining for a long time is a mark of good memory. Some persons can learn quickly, but forget soon; others take long time to learn, but retain for a long time what they have learned.

(6) **Serviceability:** Utility or serviceability is a sign of good memory. Remembering the right thing at the right time in the right way points to good memory. This also means the ability to forget the irrelevant things.

### **Basic factors of Memory**

Memory is a mental process of storing impressions of past experiences and then recalling or reactivating them in the conscious mind. It comprises leaning, retention, recall and recognition. The factors of Memory are-

- a) **Learning or registration:** The first and foremost factor of memory is learning. Every time we repeat something there is a signal going through our brain. This signal can create a new path but it usually follows the established path it created if it is learnt clearly. As more signals pass through, the path becomes stronger. This is 'learning'. This process is the initial acquisition or encoding of new information of experiences which leads to the establishment of ideas in the mind. It is processing and combining of received information which may be visual, auditory, olfactory, touch or semantic encoding which comprises information of concepts by using language. It is also concerned with the use of images, mental picturisation of the information and motor code which means usage of (motor physical) skills like swimming, cycling, playing games etc. After all, information is learnt only when it can be retrieved later and retrieval cannot occur unless information was learnt. Thus, in order to memorize a thing, the first essential is its learning. If we have learnt a thing well, we shall be able to retain it for long and it will be easy to recollect and remember it. If there is no learning, there would be no remembering. Only those things which are properly learnt and understood by us are easily remembered. So, the process of establishing association of ideas in mind is learning.
- b) **Retention:** According to Woodworth and Schlosberg(1954) retention is one of the process out of four processes of memory. These processes are-memorizing, retention, recall and recognition. According to Eysenck, retention means what remains in the memory. We retain impressions of past factor in the subconscious level of our mind, but it is difficult to know about their status. The ability to retain facts differs from individual to individual, and an important sign of good memory is better retentive ability of an individual. It is the view of psychologists that the learnt material s retention in brain is in the form of memory traces. When these memory

traces get weak and retention also gets weaker or ends. Some psychologist is of opinion that retention is related with the frontal part of brain. Some others said that it is a mental process and not physical process. Thus, we can say that retention is a psycho-physical process.

Retention of a material in the mind is dependent on the learning methods and the nature of the material to be learned. If the subject matter is clearly understood by the learner, then it is better retained. Besides these the mood of the learner, his attention and interest towards materials and feelings pleasurable or unpleasurable, affect retention.

**C) Recall or Retrieval:** This is the third factor of memory. Recall is reproduction that consists in the revival of past experiences. It is reinstatement of past experiences in the same order. It consists in bringing to the level of consciousness, the subconscious traces of experiences. A student learnt a lesson in the past; it has been retained in his mind; now he call it back to the level of consciousness. This process of ideal revival is called recall or reproduction. Recall means the impressions of learnt material is presented in the foreground of one's consciousness in the form of an image or language to serve a specific purpose

According to English and English, "Recall is the process whereby a representation of past experience is elicited specially evoking or experiencing an image".

Therefore, we can say that presentation of past experiences in the form of image or language or in both ways is known as recall. The time taken between learning and recall of a subject material is known as recall time. Ebbinghaus on the basis of his experiments concluded that recall is reproductive and totally reproductive.

Psychologists are of the view that whatever one learns, his recall is slightly changed therefore, they say that recall is constructive. Recall involves the association of ideas. For examples, by seeing a car on the roadside, a person may remember the name of its owner.

The reason for this is that the car owner is known to the person. Due to the similarities or contrast of certain basic elements, recall of one thing by seeing, hearing, tasting smelling or touching another may occur. Again, an individual can remember two things at the same time if they are learnt side by side. So for recall, vividness or clarity, frequency and interest of the learnt material is very essential.

Coming to the consciousness the past experiences is called recall. It is mental revival of those experiences which have been learned. Recall is a learned response to a stimulus. This recall is based on retention, the association of ideas. It is on the basis of it that we are able towards the same

calls remember old things. What is well retained is easily recalled. It is the final stage of the act of memory.

There are three laws of that determine the association of ideas. They are named by the psychologists as the law of contiguity, the law of similarity and the law of contrast. Recall depends on these three laws of association.

The law of contiguity states that two experiences which occur one after another get associated with each other in such way that when one recalled, the other is also recalled.

The law of similarity states that similar events and facts become linked with each other so that one easily reminds the other. The law of contrast states that the contrasted characters associated with each other so that one reminds them simultaneously.

Sometimes it becomes difficult to recall a material even if we feel certain that we know it. This is called the 'tip-of-the-tongue phenomenon. Sometimes the image or idea can be recalled easily while sometimes it may not be. Some psychologists classify recall into three types ----Director free recall, serial recall and Indirect recall. When there is recall without any cue or help, it is called free recall. In 'serial recall the items are given in a certain order so that remembering is facilitated, and in 'cued' or indirect' recall, there are 'cues' in the form of some sign and recall becomes easy. When past experiences arrive in the conscious automatically or without efforts it is known as spontaneous recall. On the other hand, when past experienced are brought with great efforts in the consciousness it is known as deliberate response. The mental state of any person also affects recall; when he is willing to remember something especially very pleasant experiences or very painful ones. Recall is affected by the physical, mental and emotional conditions of a person.

D) **Recognition:** The fourth factor of memory is recognition which means the capacity to be aware of a previous experience. It is the awareness of the experience that has been retained up in the mind. It implies the identification of the recalled material. Eysenck et.al. (1972) say "Recognition is the ability to judge a datum according to whether it is identical with one perceived on an earlier occasion." Recognition is familiarity with something, the ability to judge whether it is identical with a perceived experience on an earlier occasion. It is easier to recognize than to recall. Sometimes we may not be able to recall a person, but when we see him or hear his voice, we can easily recognize him. Recognition is an easier process than recall, and it is affected by time. Recognition is definite when one recognizes a learnt material in

detail with all its associated description and recognition is indefinite when the perceived material is recognized but not in detail.

Recognition implies knowing the object again. It is the awareness of a previous experience. The individual is able to identify different objects due to recognition ability. It is the remembering of something present, identifying something that previously perceived. We look at an individual or an object and start saying that we have known him for long. This is what is called recognition. For example, "I remember it," "I know the man," "I have seen it before,"

A person's power of recognition is much larger than his power of recall, we may not be able to recall the original setting in which a particular experience occurred and yet may be able recognize it. We see a man and know that he is so and so, though we may not be able to recall when we saw him before or how we come to know him that one reminds the other that stands in contrast with it. Recognition is related to familiarity. In order to recognize a person fully, we have to affirm familiarity and also to recall his name and the place of last meeting etc.

### **Types of Memory**

There are different types of memory as classified by different psychologist. According to C. J. Adcoc, memory is of three types: (a) Span memory, (b) Rote memo(C) Memory for Meaningful material. Sturt and Oakdew has classified memory as (a) Habit memory and (5) Pure memory.

A brief description of the different types is given below:

- (1) **Habit Memory and True Memory:** Habit memory means memory of an object or idea resulting of mechanical repetition of the activity. Habit memory is a mechanical type of memory. It is related to the collection of facts in a mechanical manner. It is remembering of facts without association of ideas, understandings and application. So, habit memory is dependent upon mere motor mechanism. It is merely learning anything by rote. For example, learning of mathematical table, poem by heart is the result of habit memory. A habit is formed by doing a particular activity repeatedly over a period of time, for example, playing a musical instrument. It is a memory which is developed by repeating the something again and again. Habit memory becomes more a physical activity.

True memory involves independent recollection of a past experience. It involves the ability to reproduce a learnt material without any mechanical mechanism. True memory depends in an independent recollection. It involves images or mental pictures of past situations. This memory is not mere mechanical repetition. It is also known as pure memory. It depends upon the laws of association, interest of the

learner, understanding, and application of ideas. This type of memory helps us in developing our intellectual capacity and it is exercised by all educationists.

- (2) **Rote Memory and Logical Memory:** Rote memory is verbal repetition of a learnt material mechanically. It is similar to habit memory and it is possible without understanding the learnt material. That means rote memory is the mechanical repetition of an activity without understanding. It is known as verbal memory. When children learn things without understanding and insight, we call it as rote memory. So, mechanical repetition of experience without intellectual comprehension is known as rote memory. For example, learning the multiplication tables or a poem.

Logical memory involves proper understanding of the material learnt. Logical memory depends upon understanding, the power of reasoning of the learner. It does not require any type or mechanical repetition. When an individual learns with understanding, insight and logic, it is called logical memory. The bright and intelligent students possess this type of memory. For example, when the content of a lesson is understood by a student, then he can retain it in his mind for a longer period and reproduce it, whenever required in future. It does not depend on mechanical verbal repetition only. Teachers should encourage logical memory mainly in higher classes while rote memory can be very useful, especially in the pre-primary and lower primary classes to learn mathematical tables and poems.

- (3) **Immediate Memory and Permanent Memory:** When a learnt material is reproduced i.e. recalled immediately after learning, it is called immediate memory. It means reproduction of the material just after learning it. One has to reproduce the learnt material without losing his time. So, this memory needs learner's alertness, attention, power of retention and ability of understanding the facts, events or ideas. Here, the time gap between learning a material and reproducing it is very little. For example, pupils studying just before the exams and then reproducing the learnt material; but only a part of it is remembered after a long period of time.

When after a sufficiently long period of time the learnt material can be easily recalled by a person it is called permanent memory. It means one has learnt something in the past and reproduced it in the present a long a long interval of time. It has the qualities of active or pure memory like association of ideas, understanding and capacity to apply knowledge. In this type of memory, individual learnt something in the past and reproduced it

after long period of time. The ability to remember a material after a long gap of time is the best type of memory. It is true memory.

(4) **Passive Memory and Active Memory:** When the past experiences are recalled without an effort of the will, we call it passive memory. For example, the sight of a delicious mango, reminds us of its sweet taste. In it, we remembered without making any deliberate efforts or will. On the other hand, when we recall the facts and experiences by an effort of the will, our memory become active. When try to recollect the forgotten incident by an effort of the will and succeed at last, is called active memory.

(5) **Sensory Memory :** Sensory memory allows individuals to retain impressions of sensory information after the original stimulus has ceased. Sensory memory is of the earliest stage type memory. During this stage, sensory information from the environment is stored for a very brief period of time, generally no longer than a half-second for visual information and 3 Or 4 seconds for auditory information. We attend to only certain aspects of this sensory memory allowing some of this information to pass into the next stage short-term memory. We see, touch, hear, smell, and taste the things through the functioning of our sense organs that provides five types of memory images. These are called sensory memory. Sensory memory is not involved in higher cognitive functions like short-and long-term memory.

(6) **Short-term Memory and Long-term Memory :** Short-term memory, also known as active memory, is the information we are currently aware of or thinking about. In Freudian psychology, this memory would be referred to as the conscious mind. Paying attention to sensory memories generates the information in short-term memory. Most of the information stored in active memory will be kept for approximately 20 to 30 seconds. The capacity of STM is very limited too. Normally, 7 (plus or minus 2) seems to be the maximum number of units that can be held in STM. Normally, letters or numbers are coded in STM by the acoustic properties rather than the visual ones. While many of our short-term memories are quickly forgotten, attending to this information allows it to continue to the next stage- long term memory.

Long-term memory refers to the continuing storage of information. In Freudian psychology, long-term memory would be called the preconscious and unconscious. This information is largely outside of our awareness but can be called into working memory to be used when needed. Some of this information is fairly easy to recall, while other memories are much more difficult to access. Long-term memory has an incredibly vast storage capacity, and some memories can last from the time they are created until we die. There are many types of long term memory. Explicit or

declarative memory requires conscious recall; it consists of information that is consciously stored or retrieved. Explicit memory can be further subdivided into semantic memory (facts taken out of context, such as "Paris is the capital of France") and episodic memory (personal experiences, such as "When I was in Paris, I saw the Mona Lisa").

### **Improvement of Memory**

The issue of improvement of memory has been of debate among psychologists since many years. "All improvement in memory consists of one's habitual method of recording facts"- Dr. William James, Father of American Psychology viewed in this way. Earlier, it was believed that memory is one of the faculties of the mind and it can be improved by practice or exercise. But today most of the modern psychologists opined that memory is a native power and it is not possible to improve by training or practice. As the power of retention is an innate ability. So, it cannot be increased by practice. Raymont has pointed out that improvement of memory is possible in clear thinking, orderly arrangement, lively interest and close attention. But according to McDougall, memory can be improved by practice. With the help of practice or training memory can be improved. On the other hand, William James opined that retentiveness is a physiological ability and it cannot be changed. It is mostly innate and depends on heredity. Practice may improve our power of learning, not the power of retentiveness. GF Stout has given us a different view and said that general memory power of an individual cannot be change, but special memory can be improved by practice. Individual's general memory power is unchanged. By following some favourable conditions an individual may make effective and economic use of his memory.

### **Economic Methods of Memorization**

Psychologists often argue on the question- "Is it really possible to improve memory? Some are of the opinion that the ability to remember is inborn and in no way can it be improved, but others are of the opinion that if certain methods are adopted materials learnt can be memorized easily. Such methods are termed as Economic Methods of Memorization. Some of these methods are discussed below-

- a) **Recitation Method:** In this method a material is read a number of times until the learner can recall each and every word without even looking. The learner continuously evaluates his capability to recall and makes notes of the parts which are not remembered evaluates. His weak connections are discovered and more attention is paid to those. This way recitation method helps memorization.
- b) **Whole and Part Method:** When a material, for example, a poem as a whole (whole meaning from beginning to end) is learnt or read repeatedly it

is remembered easily. On the other hand, if the subject matter is long it may be subdivided into smaller parts. This is one method of memorization which is very useful if the subject to be remembered in smaller parts and each part learnt separately. When all the parts are memorized then the learnt material is taken as a whole. This is called Part method.

Sometimes, however, the methods are to be mixed- the whole method is used to learn a material and its difficult parts are learnt separately. When the difficulty is overcome, the learner again resumes leaning the material as a whole. Both the whole and part methods have their own merits and demerits. Like the whole method is more time consuming but the whole method can be more successful in case of more intelligent children. So the success of the two methods depends on the situation and nature of the material to be learnt and the ability of the learner.

- c) **Spaced and Unspaced Method:** In the 'spaced' method of memorization a part of material is learnt and then it is followed by rest. Alternate periods of learning and rest are carried out in order to memorize a subject. This method is very useful to learn a long and difficult material.

In the Unspaced method a material is learnt in one sitting without any rest in between. Researchers have shown that out of these methods, the spaced method has been found to be more effective as the rest between learning refreshes the body and mind while the Unspaced method tends to create fatigue. However it is useful to learn small materials like short poems and simple addition or multiplication tables.

- d) **Method of Association:** The principle of association is useful in memorization. If a part of new material to be learnt, is associated with one's previous knowledge of something related to it, then memorization becomes easier, for example, to recall the colours of the rainbow, the remembering of the word 'VIBGYOR' (Violet-Indigo-Blue-Green-Yellow-Orange-Red) maybe very useful.
- e) **Active Method:** If the learning things are learnt by applying learning by doing method instead of verbal learning then its impression can be retained in the unconscious mind for very long time. In such a method the memory traces become very strong. As a result, it becomes easy for the person to recall the learning experiences immediately at the time of need.
- f) **Logical Method:** When we learn something by applying our intellectual capacities such as thinking, reasoning, problem solving, judgment etc. then the images of that learned things become permanent in our mind. It fixes the matter durably and accomplishes much for permanence.

**Conditions in classroom which favours memory.**

There are certain conditions which help a person to remember easily. Many psychologists say that memory is inborn. But it has been observed that certain conditions definitely help retention of the material learnt. Some of the conditions quite useful are-

- a. **Meaningful Content** : The material learnt should be meaningful to the learner. Subject matter which is relevant to the learner is easily retained and meaningless ones fade away very soon.
- b. **Previous knowledge**: The principle of 'known to unknown' or 'easy to difficult' should be followed. This means that something known or previous knowledge of a material should be related to the new subject matter is essential to remember the new lesson learnt.
- c. **Good health of the learner**: To remember an experience, good health of the learner is necessary. On the other hand, if the learner is sick or even tired, retention of the subject matter is not possible and whatever is learnt fades away from the mind.
- d. **Interest**: Interest increases attention of the learner and as a result the content of material learnt is retained better. A person focuses his attention on those things in which he is interested. Therefore, a very important condition which facilitates memory is interest of the learner.
- e. **Will power of the learner**: A learner must have the determination to learn if he is to achieve his goal. Strong will power of the learner will automatically lead to better memorization even if he does not possess high IQ.

Thus, by means of some specific conditions, memory can be improved.

### **Role of Teacher in Memorization of the Learners**

Individual's general memory power is unchanged. By following some favourable conditions an individual may make effective and economic use of his memory.

These are given in below:

1. Interest is the main condition of memorization. Much emphasizes should be given in developing interest of the students.
2. Following the principles of association and relationship while studying a subject.
3. Association is very helpful in remembering and recall.
4. Paying attention and concentration. Will power should be promoted.
5. Establishing relationship between new knowledge and previous knowledge.
6. .Using rhythmic recitation, learning by doing and introduce proper grouping and rest at appropriate intervals.

7. Giving more stress on practice and active participation of students
  8. Make familiar with the goals and aims of the activities.
  9. Repetition and drill work should be provided so that it can strengthen the bond in learning.
  10. Logical leaning should be applied for proper understanding and appreciation of materials.
  11. Sensory knowledge should be provided so that knowledge gained through are retained in mind for a long time.
  12. For effective memorization, meaningfulness of material is important.
  13. Spaced learning also helps lot in memorization of learnt materials. Providing space in the learning time by giving some intervals.
  14. Active method or learning by doing should be used to make the leaning image much effective and longer lasting.
- Thus, a teacher can help his students in memorization.

### **Forgetting: Meaning**

Forgetting is failure in retrieving the past experiences either temporarily or permanently. Forgetting is thought to be due to the fading of or decay of memory traces in the brain with the passage of time.

According to English and English, "Forgetting is the loss or losing, temporary or permanent, of something earlier learned, losing ability to recall recognize or do something"

- Ebbinghaus defined as "Forgetting is a passive mental process.
- Munn (1967) defines forgetting as – ‘the loss, permanent or temporary, of the ability to recall or recognize something learned earlier.’
- James Drever (1952) in his book "A Dictionary of Psychology" defines- "Forgetting means failure at any time to recall an experience when attempting to do so or to perform action previously learned"
- Bhatia (1968) - "Forgetting is the failure of the individual to revive to consciousness an idea or group of ideas without the help of the original stimulus”.

Forgetting is the process of fading of impression of learned material from the mind with the passage of time. Forgetting refers to failure to either recall or retain information into present consciousness. All experiences leave traces or after-effects (images) in memory parts of the brain. Failure to retain these traces from the parts of memory is called Forgetting.

### **Characteristics of Forgetting**

The characteristics of Forgetting are-

- (1) When learning occurs, forgetting definitely happens.

- (2) It is the inability of retaining an expression in the mind.
- (3) It is the psychological phenomenon that takes place between retaining and remembering.
- (4) Just like memory, forgetting is also a mental process.
- (5) When there is memory, there is bound to be forgetting.
- (6) Forgetting usually occurs in the initial stages of learning a material. Once understanding of the subject matter develops, forgetting decreases.
- (7) It is a kind of inability to retaining an impression in the mind.
- (8) Forgetting is also a mental process.
- (9) For remembering, forgetting is essential.
- (10) It is an essential condition of memory.
- (11) It is a voluntary activity of mind.
- (12) Forgetting may be permanent or temporary.
- (13) It is a defence mechanism of human mind which helps the individual to forget the painful experiences.

### Factors of Forgetting

The causes of forgetting may thus be described briefly below-

- a) **Lapse of time:** Forgetting sometimes occurs due to prolonged time gap between acquisition of the material and recalling it. After learning, due to neurological changes, there are memory traces or images of the subject matter in the mind, but with the passage of time these traces fades away, and accordingly the amount of forgetting increases.
- b) **Lack of Interest:** A person usually forgets about those objects or ideas in which he has no interest. Sometimes one remembers a learnt material for a long time but eventually if he loses interest in it, he forgets it. Therefore a teacher should try to generate interest in the students to remember the subject matter well as pleasant experiences are remembered better. If the memory traces are very weak than unpleasant ones get weaker and weaker and ultimately fade away.
- c) **Old Age:** An old man forgets easily than a younger one. This is mainly because of physical and nervous weakness. With age, the body cells and organs degenerate and they affect the motor abilities as well as the mental processes like imagination, memory etc.
- d) **Brain Injury:** Serious brain injury, especially of the cerebrum area definitely affects the power to memorize. The cerebrum of the brain

determines complex functions like thinking. Therefore if this part is injured then memorization becomes difficult.

- e) **Lack of Practice:** When a learnt material is not practiced frequently, then forgetting occurs.
- f) **Organization of the Material:** A well-organized material is easily remembered and can be practiced from time to time. A teacher should carefully organize the subject matter and encourage the students to practice often so that they can remember them well.
- g) **Emotional Condition of the learner :** Uncontrolled emotions like fear, anxiety etc. lead to an individual's forgetfulness. In situations where an individual is emotionally unstable, e.g., if he is too angry or too afraid of something in the learning situation then he tends to forget a learnt material.
- h) **Interference:** Interference is another major cause of forgetting. Interference in learning leads to forgetting. Forgetting occurs when memories of the same type interfere with. There are two types of Interference- Retroactive Interference and Proactive Interference.
  - a. Inhibition of the earlier learning and recall by later learning is known as retroactive inhibition. The interpolated activity between original learning and recall causes forgetting. It is called retroactive because the interference is with the memory of events that came before the interfering activity. Example: A student studies and understands the events and causes of World-War I thoroughly. After few weeks, the student studies events and causes of World-War II. If the student then fails to remember the events and causes of First World-War, this would be an example of Retroactive Interference.
  - b. If the earlier learning interferes with later learning and inhibits recall of new material, it is known as proactive inhibition. This usually happens when the previous learning is better than the present one. The phenomenon where the student fails to remember new information having mixed it with similar previous information is called Proactive Interference. Example: Like the previous example, a student studies and understands the events and causes of World-War I in depth. After few weeks, the student studies events and causes of World-War II. If the student then fails to remember the events and causes of Second World-War, this would be an example of Proactive Interference.
- i) **Inadequate Impression at the Time of Learning:** The reason for inadequate impression is lack of attention and inadequate learning will be necessary for good memory. Forced learning results in no learning because forced learning distracts our attention.

- j) **Over learning:** Learning as a result of more or longer practice than would be needed for immediate recall or for immediate performance at a given level of skill. Over learning is the repeated practice of a skill or study material to further strengthen memory and performance. It refers to the continued practice on a task after some criterion of mastery on that task been achieved. Excessive repetition of same learning creates fatigue and leads to forgetting.
- k) **Use of Drugs and Alcohol:** Addiction to intoxicating drugs or alcohol laid detrimental effect on our nervous system and this seriously hampers memory.
- l) **Repression:** Repression is the process of deliberately trying to forget unpleasant experiences and pushing them into the depth of the mind, in short, it is motivated forgetting. Freud first used the term repression to describe the tendency to forget anything associated with painful experiences. He says that we forget because we want to forget. Thus, various kinds of factors may lead to forgetting.

### Ways to Reduce Forgetting

Certain measures can be adopted to reduce forgetting. They are briefly discussed below:

- a) **Determination to learn:** The learner must be determined to learn. With proper willingness and determination on the part of the learner, remembering becomes easy and forgetting is reduced. The teacher must therefore motivate the students to learn.
- b) **Attention:** When a learner pays attention to whatever he intends to learn, the impressions created in the mind are clear and permanent. This helps retention. A very important duty of a teacher is to generate interest in the students so that they are attentive in class.
- c) **Association of ideas:** While learning a new material if it is associated with something already learnt earlier, then remembering the new subject matter becomes easier and as a result forgetting is reduced.
- d) **Learning with rhythm:** If poems or mathematical tables are learnt in a rhythmic manner then retention becomes encoded in the mind and forgetting is minimum.
- e) **Organization:** If the material to be learnt is properly organized, then learning become easy and better retention and recall follow. On the other hand, learning in a haphazard manner results in forgetting. For example, to remember the names of different living beings they can be classified into plants, birds, fish mammals etc. So to reduce forgetting, organization of subject matter is necessary.

- f) Rest: When learning is spaced with adequate periods of rest then it helps memorization. If the person is tired after prolonged learning he finds it difficult to remember the learnt material. So to refresh the body and mind and enhance memorization, rest is essential to consolidate the impressions of the subject matter. This will definitely reduce forgetting.

Long Answer type Question (9/10/12 marks)

1. **What is Memory? Discuss in brief the various kinds of Memory and their educational significances.**
2. **How can the teacher make his students memorize and learn easily?**
3. **Describe the characteristics of Good Memory. Can Memory be improved?**
4. **What is Forgetting? Discuss the factors that lead to Forgetting.**
5. **Discuss the factors of Memory.**
6. **Give your suggestions on how forgetting can be reduced.**
7. **What is Memory? How memory can be improved? (GU'17)**