L – 8 – Psychology – Memory

Memory : - is the process by which we encode , store and retrieve information.

Stages of memory : -

1 – Encoding : - is the process by which information is initially recorded in a form usable to memory ,or it is the transformation of information into the kind of code or representation that memory can accept .

2 – Storage : - it is the retention of encoded information .

3- Retrieval : - it is the process by which information is recovered from memory and is brought to awareness and used.

The three stage of memory may operate differently in situation that require us to store material for a matter of seconds (working memory) . moreover, different long –term memory systems seem to be involved in storing facts , which are part of explicit memory , and skills which are part of implicit memory .

Recent brain-scanning studies of long-term memory indicate that most of the brain regions activated during encoding are the left hemisphere and that most of regions activated during retrieval are in the right hemisphere .

Different brain regions may mediate working and long-term memory .Damage to the hippocampal system impairs performance on long-term memory tasks but not on working memory tasks .

There are three kinds of memory that differ in their temporal characteristics . 1 – Sensory memory lasts over a few hundreds of milliseconds i.e. for an instance.

2 – Short –term memory or working memory :- operate over seconds .

3 – Long –term memory :- operate over times ranging from minutes to years .

Sensory memory has a very large capacity but decay in a very short time . information within sensory memory that is attended to is transferred to the next memory , working memory .

Information in the working memory tends to be encoded acoustically , although we can also use a visual code .

The most striking fact about working memory is that its storage capacity is limited to 7 +/- 2 items or chunks .

A **chunk** is the meaningful group of stimuli or material that can be stored as a unite in the working memory .

Although we are limited in the number of chunks we can remember , we increase the size of chunk by using information in long-term memory .

Information can be lost or forgotten from the working memory . One cause of forgetting is that information decay with time the other is that new items displace old ones . Information can be prevented from decaying if it is rehearsed .

Rehearsal :- is the repeating of information over and over .

Maintenance rehearsal :- is the active efforts to hold information in the working memory .

Elaboration : - is processing through which information is transferred from the short term store into long term store. so it is the efforts to encode information in the long term memory. .

Retrieval slows down as the number of items in the working memory increases , some have taken this result to indicate that retrieval involves a search process and others have interpreted the result in term of activation process .

Working memory is used in solving various kinds of problems such as mental arithmetic , geometric analogies and answering questions about text , however , working memory does not seem to be involved in the understanding of relatively simple sentences , Working memory may also serve as a way station to permanent memory, in that information may reside in working memory while it is being encoded into long-term memory . Information in the long-term memory is usually encoded according to its meaning , if the items to be remembered are meaningful but the connections between them are not , memory can be improved by adding meaningful connections that provide retrieval paths ,the more one elaborates the meaning of material , the better memory of that material will be . Many cases of forgetting in long-term memory are due to retrieval failure (the information is there but cannot be found) Retrieval failure are more likely to occur when there is interference from items associated with the same retrieval cue , Such interference effects suggest that retrieval from long –term memory may be accomplished through a sequential search process or spreading activation process .

Some forgetting from long-term memory is due to a loss from storage , particularly when there is a disruption of processes that consolidate new memories . The biological locus of

consolidation includes , the hippocampus and surrounding cortex , Recent research suggest that that consolidation takes a few weeks to be completed .

Retrieval failures in long –term memory are less likely when items are organized during encoding and when the context at the time of retrieval is similar to the context at the time of encoding , Retrieval process can also be disrupted by emotional factors , in some cases , anxious thoughts interfere with retrieval of the target memory , the target memory may be actively blocked (repressed) . In still other cases emotion can enhance memory as in flashbulb memories so flashbulb memory is a vivid and relatively permanent record of the circumstances in which one learned of an emotionally charged , significant event .

Explicit memory :- refers to the kind of memory manifested in recall or recognition , in which we consciously recollect the past . implicit memory :- refers to the kind of memory manifests itself as an improvement on some perceptual ,motor ,or cognitive task, with no conscious recollection of the experiences that lead to the improvement , Although explicit memory particularly recall and recognition of facts breaks down in Amnesia , Implicit memory usually spared , this suggests that there may be separate storage systems for explicit and implicit memory . Research with normal individual also suggests that there may be separate systems for explicit and implicit memory , much of this research has relied on a measure of implicit memory called priming (for example the extent to which prior

exposure to a list of words later facilitates completing stems of these words) . Some studies reveal that an independent variable that affects explicit memory (the amount of elaboration during encoding) has no effect on priming , and other studies show that a variable affect implicit memory has no effect on explicit memory . Brain – scanning studies with normal individuals show that explicit memory is accompanied by increased neural activity in certain regions whereas implicit memory is accompanied by a decrease in neural activity in critical regions. Memory is constructed and reconstructed on the basis of expectation and knowledge , this kind of reconstruction can occur at the time the memory is originally formed or at varying time period following its formation , this kind of reconstruction form the basis for memories seem very real although systematically incorrect and are recounted with great deal of confidence .Methods of Improving memory : -

1 – by chunking : -because the capacity of working memory cannot be increased beyond 7 +/- 2 by enlarging the size of chunk increasing the number of items in our memory span . 2 – imagery and encoding :- the long term memory for fact can be improved at the encoding and retrieval stages , by using imagery by adding meaningful connection between them at the time on encoding by mental images which is useful for connecting pairs of unrelated items which is the basic principle underlying mnemonic system such as method of loci and key word method .

3- the context and retrieval by restoring the context in which

the learning took place .
4 – elaboration and encoding :-is by elaborating the meaning of the item during encoding .
5 – Organization :- is to organize material during encoding improve subsequent retrieval hierarchical organization seems preferable
6 – practicing retrieval the information while learning it by asking yourself about what you are trying to learn .