

# Chapter 7 - Human Memory

## Question 1:

What is the meaning of the terms 'encoding', 'storage' and 'retrieval'?

## Answer:

The meaning of the terms encoding, storage and retrieval are as follows:

- (i) Encoding** – It refers to the first stage of memory in which information is recorded and registered for the first time, in order to be used by memory systems. The external stimulus generates neural impulses in sensory organs during encoding which helps to receive the information and process it in different areas of the brain, in order to derive a meaning and represent it to be processed further.
- (ii) Storage** – It is the second stage of memory in which the encoded information is stored and retained over a period of time to be used later.
- (iii) Retrieval** – It is the third stage and refers to bringing the stored information into awareness in order to be able to perform the cognitive tasks.

## Question 2:

How is information processed through sensory, short-term and long-term memory systems?

## Answer:

The information is processed through sensory, short-term and long-term memory systems in the following ways:

- (i) Sensory Memory** – The incoming information enters through sensory memory which has a large capacity but is of very short duration of less than a second. It registers information from each of the senses with a reasonable accuracy.
- (ii) Short-term Memory** – It refers to the system that holds small amount of information for a brief period of time. According to Atkinson and Shiffrin, the information is primarily encoded acoustically and unless it is rehearsed continuously, the information gets lost within 30 seconds.
- (iii) Long-term Memory** – The information that survives in short term memory enters the long-term memory system. Once information enters here, it is never forgotten as it gets encoded semantically. Thus, it is a permanent storehouse of all the information.

## Question 3:

How are maintenance rehearsals different from elaborative rehearsals?

## Answer:

- Maintenance rehearsals maintain the information through repetition. The information is lost when the repetition is discontinued.

- The short term memory system uses maintenance rehearsal to retain the information for a longer duration and it is carried through silent or vocal repetition.
- On the other hand, elaborative rehearsals associate the information that is to be retained with the already existing information in long-term memory. The permanence of new information is determined by the number of associations that is created around it.
- The incoming information is organised in many different ways by expanding the logical framework and creating a mental image.

#### Question 4:

Differentiate between declarative and procedural memories?

#### Answer:

	<b>Declarative Memory</b>		<b>Procedural Memory</b>
1.	It refers to all the information related to facts and data such as first prime minister of India was Jawaharlal Nehru and a human is a mammal.	1.	It refers to the memories related to procedures for accomplishing various tasks and skills like driving a car or playing cricket.
2.	The facts are amenable to verbal descriptions.	2.	The contents cannot be described easily.

#### Question 5:

Describe the hierarchical organisation in long-term memory?

#### Answer:

- The hierarchical organisation in long term memory was suggested by Allan Collins and Roses Quillian. They observed that the knowledge in long-term memory is organised hierarchically in a networked structure.
- The elements of this structure are concepts known as nodes. The connections between nodes are called labelled relationships that indicate category membership or concept attributes.
- According to this view, all the knowledge can be stored at a certain level, which applies to all the members of a category without repeating that information at the lower levels in the hierarchy. It ensures efficient use of long-term memory through cognitive economy.

#### Question 6:

Why does forgetting take place?

**Answer:**

Forgetting takes place because of a sharp drop in memory. The following are the different theories that have been put forward to explain the causes of forgetting:

**(i) Forgetting due to trace decay** – It is the earliest theory of forgetting which assumes that the memory leads to modification in the central nervous system. This is akin to physical changes in the brain called memory traces. These traces later fade away and become unavailable when they are not used for a long time.

**(ii) Forgetting due to interference** – This theory suggests that forgetting is due to interference between various information that are contained in the memory store. Interference occurs when the sets of associations that are formed during learning and memorising compete with each other for retrieval.

Proactive interference is a result of earlier information that interferes with subsequent learning while retroactive interference occurs when new information interrupts the recalling of earlier information.

**(iii) Forgetting due to retrieval failure** – The contents of memory may become inaccessible either due to inappropriateness or absence of retrieval cues at the time of recall.

**Question 7:**

How is retrieval related forgetting different from forgetting due to interference?

**Answer:**

Retrieval related forgetting takes place when the contents of memory become inaccessible either due to absence or inappropriateness of retrieval cues during the time of recall. It is different from forgetting due to interference as interference suggests interruption between the associations of information that are contained in memory in order to compete with each other for retrieval.

**Question 8:**

What evidence do we have to say that 'memory is a constructive process'?

**Answer:**

- Memory is a constructive process as the information that is stored undergoes modification according to past knowledge and schema. Schema refers to active organisation of past reactions and experiences.
- Bartlett pointed that the memorised information is influenced by the meaning that is assigned to the stimulus material. It cannot remain in isolation from other cognitive processes after it is committed to the memory system.
- Furthermore, Bartlett also presented some experiments in which the reading of stimulus materials were followed by fifteen minutes break and the participants had to recall what they read. They altered the texts to make them more consistent with their knowledge and transformed the material in a more rational and better way.

Therefore, it can be concluded that memory is a constructive process as the stored information is dynamic and changes or modifies from time to time.

### Question 9:

Define mnemonics? Suggest a plan to improve your own memory.

### Answer:

Mnemonics are processes to enhance memory by using images or emphasising the organisation of the learnt behaviour. In order to improve memory, two easy methods can be used based on the kind of material to be learnt. These are:

(i) Words–Words can be learnt by relating them to form sentences. For example the words are–shoe, pen, teacher, books, table. These words can be arranged as–I was gifted a new pair of **shoes** and a **pen** by my **teacher**. However, after looking at my dirty **books**, she asked me to stand on the **table**. This method helps to learn the words easily.

(ii) Chapters–Chapters or lessons can be learnt by first reading and then writing them. This enables continuous recall of information. After enough practice, most chapters can be recalled.