

# Maharashtra State Board Class 12 Psychology Solutions Chapter 4

## Cognitive Processes

### 1. Choose the correct option and complete the following statements.

Question 1.

When we select a few stimuli from the environment and bring them into the center of our awareness, it is called .....

- (a) attention
- (b) perception
- (c) thinking

Answer:

- (a) attention

Question 2.

Ivan Pavlov is known for explaining learning by .....

- (a) classical conditioning
- (b) operant conditioning
- (c) observation

Answer:

- (a) classical conditioning

Question 3.

When we organise the information from the environment, group them and give some meaning, that process is called .....

- (a) attention
- (b) perception
- (c) thinking

Answer:

- (b) perception

Question 4.

In operant conditioning the experiment was conducted on .....

- (a) dog
- (b) rat
- (c) monkey

Answer:

- (b) rat

Question 5.

The change in behaviour due to practice or experience is known as .....

- (a) perception
- (b) thinking
- (c) learning

Answer:

- (c) learning

### 2. Answer the following questions in 35 – 40 words each.

Question 1.

What is fluctuation of attention?

Answer:

Attention is the mental process of bringing few stimuli into the centre of awareness out of the many stimuli present. It is difficult to attend to a single stimulus for a long period of time. Our attention shifts from the original stimulus to another stimulus for a fraction of time and then comes back to the original stimulus. This may be due to factors like fatigue, decreased interest, etc. In most cases, attention fluctuates due to the limitations of human attention and hence cannot be totally eliminated.

Question 2.

Give three examples of top-down processing in perception.

Answer:

Perception is defined as the process of assigning meaning to information received about the environment based on the past experiences. We make use of both top-down processing and bottom-up processing while perceiving a stimulus. When we utilize top-down processing, our ability to understand information is influenced by the context in which it appears.

Some examples of top-down processes in perception are-

- (a) Mr. Kumar lives in Flat A not in Flat

The circled item will be perceived as the letter B as the brain has used the context of the sentence.

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- (b) If you are asked to identify (a) the rat (b) the man, your perception will be likewise.  
(c) the human mind does not read every letter by itself but the word as a whole.

Most of you would be able to correctly read the above sentence as "The human mind does not read every letter by itself but the word as a whole".

Question 3.

What is meant by thinking?

Answer:

Thinking is the mental activity that uses various cognitive elements and processes that involves the manipulation of information.

The core elements of thinking are-

1. Mental representation – It is a coded internal sensation acquired by direct experiences through the sense organs or by indirect experiences such as narrations, pictures, etc.
2. Concepts – They form the basis for all cognitive processes, acting as building blocks by connecting with each other to form more complex concepts.
3. Schema – It is an internal representation that organizes knowledge about related concepts and relationships among them.
4. Language – Mental representations, concept and schema are represented by language, for e.g., the word 'cat' is a symbol for a 'cat'.

Question 4.

Describe any two processes of learning.

Answer:

Learning is defined as a relatively permanent change in behaviour that occurs due to experience or practice. The characteristics of learning are : (i) It involves some relatively permanent change in behaviour, (ii) The change in behaviour is due to experience or practice, (iii) Change in behaviour may be in knowledge or in skill or in muscular movements, (iv) Learning is an inferred process. The main processes of learning are:

(i) Learning by classical conditioning – It was first explained by Ivan Pavlov. It is learning by forming associations and stimulus substitution. In daily life, we learn many things by classical conditioning for e.g. a child is given an injection by the doctor and begins to cry in pain. He soon makes the connection between 'doctor', 'injection' and 'pain' and begins crying as soon as he is taken to a doctor.

(ii) Learning by operant conditioning – Learning by operant conditioning was first explained by B. F. Skinner. He said that learning takes place to gain positive consequences or to avoid negative consequences.

3. Classify the following into Mental Representation, Concepts and Schemata.

- (1) Image of your mother in your mind
- (2) Building
- (3) Tree
- (4) School
- (5) Theater
- (6) Table
- (7) Neil Armstrong

Answer:

Mental Representation	Concepts	Schemata
Image of your mother in your mind	Building	School
Neil Armstrong	Tree	Theatre
	Table	

4. Find the odd one out.

Question 1.

Schema, Perception, Attention, Thinking

Answer:

Schema

Question 2.

Searching solution, Defining problem, Incubation, Implementation of the solution

Answer:

Incubation

Question 3.

Reasoning, Judgement, Decision making, Relaxing

Answer:

Relaxing

Question 4.

Concept, Schema, Solution, Mental Representation

Answer:

Solution

5. Identify if the following behaviours are due to learning or not. Give reasons for your answers.

Question 1.

After much hard work you are able to perform a dance step properly.

Answer:

It is due to learning as it involves a relatively permanent behavioural change due to practice.

Question 2.

In spite of getting hurt, Shayana, a five year old child, continues to play with knife.

Answer:

It is not learning as in spite of an unpleasant experience, there is no change in behaviour.

Question 3.

Once Hanif had to pay fine for breaking the signal while driving a car. Now he makes sure to stop the car at red signal.

Answer:

It is due to learning as Hanif has made an association between breaking the signal and paying a fine, i.e., negative consequences.

6. Answer the following questions with the help of given points.

Question 1.

Explain the stages of problem solving.

Points:

(i) Defining problem

(ii) Generating alternative solutions

(iii) Selecting a solution

(iv) Implementing and taking follow up of the solution.

Answer:

Problem solving is a type of thinking. It refers to the process of finding appropriate solutions to problems encountered in life. The main steps in problem solving are:

(i) Defining the problem – We need to identify and define the problem correctly. Otherwise, it will be difficult to reach a solution, for e.g., when a baby cries due to colic/stomach ache and if the mother interprets it as due to hungry, the problem will remain unresolved.

(ii) Generation alternative solutions – The person searches for possible solutions to the problem. Some solutions may be effective while other solutions have to be discarded, for e.g., Sunil finds maths difficult. He may think of solving more sums or of taking tuitions or of dropping the subject, etc.

(iii) Selecting a solution – The person selects what he considers the most effective solution, based on reasoning. This helps to resolve the problem in a realistic manner.

(iv) Implementing the solution and follow up on the solution – The person tries out the selected solution and evaluates the outcome i.e. whether it has helped to solve the problems. If the problem remains unresolved, the person may need to carry out the problem – solving procedure all over again.

Question 2.

Explain the stages of creative thinking.

Points:

(i) Preparation

(ii) Incubation

(iii) Illumination

(iv) Verification

Answer:

Creative thinking is characterised by the ability to perceive the world in new ways, to find hidden patterns, etc. It is a way of looking at problems or situations from a fresh/novel perspective. It involves divergent thinking that focuses on exploration of ideas and generating many possibilities. It is referred to as "thinking outside of the box." Researchers, poets, designers, film makers always think in a creative way.

The four stages in creative thinking are-

(i) Preparation – This involves formulating the problem and gathering information about it. Many tentative solutions are tried out and discarded. No progress seems to be made by the person.

(ii) Incubation – If the person does not get the required results, he/she may focus on things unrelated to that problem. The period helps to work out the problem without consciously thinking about it. Incubation period appears to be non-fruitful.

(iii) Illumination – After incubation, suddenly the correct solution appears to the person, due to which he/she experiences excitement. It seems that a solution has fallen into place.

(iv) Verification – The new solution may need to be evaluated a number of times. In most cases, minor changes will be required but sometimes it may demand a major overhaul of the entire process.

For e.g., A teacher asks the students to think of unusual uses for a bottle.

- The students will begin brainstorming.
- The students will come up with many uses for e.g., to store liquids, to hold plants, etc. But these are not unusual uses. They will give up and focus on something else.
- The students will suddenly find novel uses for the bottle e.g., in juggling etc.
- The students will verify these solutions with their teacher.



## 7. Answer the following questions in detail.

Question 1.

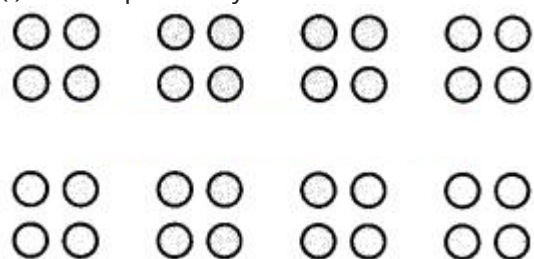
Explain the laws of perceptual organization.

Answer:

Perception is defined as the process of assigning meaning to information received about the environment based on the past experiences. Our brain has the tendency to organize our sensations as a meaningful whole. Max Wertheimer first explained this tendency in the form of laws of perceptual organization.

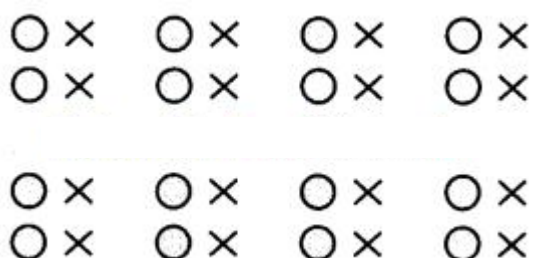
Some laws of perceptual organization are as follows:

(i) Law of proximity – Stimuli that are near to each other are perceived as together, rather than stimuli that are far away from each other.



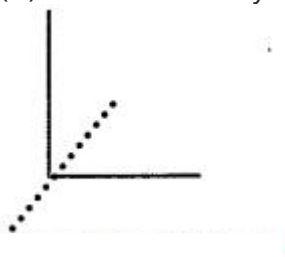
In the above figure, we perceive pairs of dots in each line because the dots which are near to each other are perceived together. So instead of perceiving a line of 8 dots, generally a line of four pairs of dots is perceived.

(ii) Law of similarity – Stimuli that are similar to each other are perceived together than stimuli that are distinct from each other.



In the above figure, we perceive 4 alternate vertical lines each of circles and crosses as similar stimuli are perceived together. Generally, we do not perceive 4 horizontal lines each having circles and crosses in alternate sequence.

(iii) Law of continuity – There is a tendency to perceive a stimulus in continuation according to its established direction.



In the above figure, a straight vertical line and a straight horizontal line are perceived together as a letter 'L' and a cutting line is perceived separately as a line following the smoothest path. Generally, we do not perceive here four different lines going in different directions.

(iv) Law of closure – There is a tendency to fill in the gaps in an incomplete stimulus so as to perceive it as a meaningful figure.



In the above figure, we fill in the gaps and perceive it as a triangle and square. Generally, we do not perceive here the three or four separate lines going in different directions.

Question 2.

Explain the core elements of thinking.

Answer:

Thinking is the mental activity that makes use of ideas or symbols instead of overt activity. The types of thinking are (i) Perceptual (concrete) thinking, (ii) Conceptual (abstract) thinking (iii) Reflective thinking, (iv) Creative thinking.

The core elements in thinking are-

(i) Mental representation – It is a coded internal sensation acquired by direct experiences through the sense organs or by indirect experiences such as narrations, pictures, etc. Mental representation is the mental imagery with the help of which the brain codes and stores the information. It is like a hypothetical internal cognitive symbol used by the brain to represent external reality. Example: a child is asked to imagine a peacock. The visual image of a peacock with its colourful plumage immediately comes to mind. This refers to “mental imagery” of an object.

(ii) Concepts – They form the basis for all cognitive processes, acting as building blocks by connecting with each other to form more complex concepts. Concepts involve extraction of some ‘idea’ on the basis of similarities and differences among the sensations. A concept is an idea which represents a class of objects, situations, etc which differentiates it from other classes of objects, situations, etc., for e.g. a child forms a mental image of a ‘dog’. He derives an idea of something similar in all examples of ‘dog’ that he has seen i.e. tail, fur, barking, etc. Thus, he has formed concept of dog. If he mistakenly identifies as a cat as a dog. he is corrected by others. So he tries to compare the mental images of dogs and cats. He has now learned and refined two concepts viz. dog and cat.

(iii) Schema – It is an internal representation that organizes knowledge about related concepts and relationships among them. Schema involves arranging many concepts in a particular system or organisation. It describes a pattern of thought or behavior that organises categories of information and the relationships among them. A child tries to organise the concepts that he has learned in a systematic way to generate a higher order understanding of patterns about information collected, for e.g. when a child visits a ‘zoo’ for the first time, images and concepts such as of different animals, cages/cages, etc., are activated in the brain simultaneously. Thus, he is forming the schema of ‘zoo’.

Conclusion:- Mental representation is sensory experiences in the form of mental images in the brain. Many similar mental representations denote concepts while many concepts put in a particular relationship to each other is schema.

Question 3.

With the help of your own examples explain the difference between distraction of attention and fluctuation of attention.

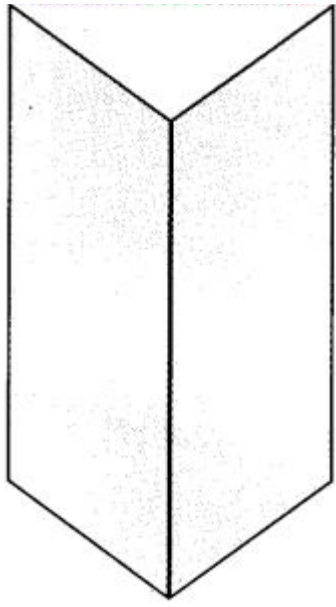
Answer:

Attention is the selective process by which we focus on only a few stimuli from among the various stimuli that are present in our environment. According to Norman Munn, “Attention is the mental process of bringing few stimuli into the center of awareness out of the many stimuli present”. Attention is influenced by objective factors such as intensity, size, movement, etc., of stimuli as well as subjective factors like interest, mindset, etc.

The distraction of attention refers to the drifting of attention from a specific stimulus to another stimulus. This occurs due to external factors such as intensity, novelty, movement, etc., of stimuli or internal factors like physical state, lack of interest, mental set, etc.

It is difficult to attend to a single stimulus for a long period of time. Our attention shifts from the original stimulus to another stimulus for a fraction of time and then come back to the original stimulus. This is called fluctuation of attention. It may be due to factors like fatigue, decreased interest, etc.

In most cases, fluctuation of attention is due to the limitations of human attention whereas distraction of attention is due to an external powerful stimulus that has drawn our attention. When attention fluctuates, it is for a very short period of time and then it returns to the original stimulus, i.e., it is a temporary shift in attention, e.g., look at the below figure. Attention fluctuates on observing the figure as a closed book or open book.



The distraction of attention arises when you are studying and the doorbell suddenly rings, you get up to answer the door. You may or may not be able to return to the original stimulus. Fluctuation of attention cannot be controlled totally but the distraction of attention should be avoided.

### **Class 12 Psychology Chapter 4 Cognitive Processes Intext Questions and Answers**

#### **ACTIVITIES (Textbook Page. No. 33)**

##### **Activity 1**

Read the following examples and try to name the cognitive process described in each of them:

1. Reena immediately sensed the burning smell of pizza put in the oven.
2. Mahesh always pays attention to what the psychology teacher teaches in class.
3. Professor Mr. Patil met one of his former students all of a sudden. He tried to recall the name of his student.
4. Saif was reading a storybook and so he forgot to complete his homework.
5. After considering all pros and cons, Dinesh took the decision of changing his business.

Answer:

1. Sensation
2. Attention
3. Perception, Memory
4. Forgetting
5. Reasoning, Decision making.