Questions:  
Q: From which language is the word science derived?  
A: The word science is derived from the Latin word ‘Scientia’.

Q: What does the word ‘Scientia’ mean?  
A: ‘Scientia’ means knowledge.

Q: How does science pursue knowledge and understanding of the natural and social world?  
A: By following a systematic methodology based on evidences.

Q: What does empirical evidence refer to?  
A: Acquiring information through direct observation or experiments.

Q: On what is scientific knowledge based?  
A: Scientific knowledge is based on verifiable evidence.

Q: What does objectivity mean in science?  
A: The ability to see and accept the facts as they are and not as the investigator might wish them to be.

Q: What should be set aside while investigating a particular phenomenon?  
A: Biases, prejudices, beliefs, wishes, values, preferences, etc.

Q: What does science aim to find through scientific causality?  
A: The cause-effect relationship between variables under consideration.

Q: What does a researcher try to control in a scientific study?  
A: All extraneous variables.

Q: What procedure does science adopt for studying a phenomenon?  
A: A certain sequential procedure.

Q: What steps are included in the sequential procedure?  
A: Identifying the problem, formulation of hypothesis, collection of facts, analysis of facts, scientific generalization and prediction.

Q: What does replication mean in science?  
A: Reproducibility of scientific knowledge under the same circumstances stated anywhere and anytime.

Q: What does replication assure?  
A: Replication assures the reliability of results.

Q: What is predictability in science?  
A: Predictability is an important feature of science.

Q: What do scientists attempt to do besides describing phenomena?  
A: They attempt to explain it and make predictions accordingly.

Questions:  
Q: When did psychology begin as a branch of philosophy?  
A: Psychology was a branch of philosophy until the 1870s.

Q: Who established the world’s first psychology laboratory in 1879?  
A: Wilhelm Wundt, a German psychologist.

Q: Where was the world’s first psychology laboratory established?  
A: At University of Leipzig in Germany.

Q: What event is considered the official start of psychology as a separate scientific discipline?  
A: The establishment of the world’s first psychology laboratory in 1879.

Q: Which school of thought is regarded as the first in psychology?  
A: Structuralism.

Q: Who advocated Structuralism?  
A: Wilhelm Wundt and his student Edward B. Titchener.

Q: What method did Wilhelm Wundt use to study conscious experiences?  
A: Introspection.

Q: Who advocated Functionalism?  
A: William James.

Q: Who is known as the father of 'American Psychology'?  
A: William James.

Q: What did William James emphasize in Functionalism?  
A: The study of human consciousness.

Q: Who proposed the theory of Psychoanalysis?  
A: Sigmund Freud.

Q: In which decade did Freud propose Psychoanalysis?  
A: In the early 1890s.

Q: What did Freud give importance to in Psychoanalysis?  
A: The study of the unconscious mind.

Q: Who advocated Behaviourism?  
A: John B. Watson.

Q: What did Behaviourism reject?  
A: The study of conscious experiences and unconscious mind.

Q: What did Behaviourism focus on to make psychology more scientific?  
A: The study of observable behaviours.

Q: Who advocated Humanistic Psychology?  
A: Carl Rogers.

Q: What did Humanistic Psychology stress upon?  
A: The study of power of free will, self – determination and self-actualization.

Q: Who is generally considered as the founder of Cognitivism?  
A: Ulric Neisser.

Q: What do researchers in Cognitive Psychology study?  
A: Higher cognitive processes like memory, decision making, problem-solving, intelligence, language, etc.

Q: Which tools are used in Cognitive Psychology research?  
A: MRI and PET scans.

1.4: Research methods in psychology:

1.4.1 Experimental method: Experimental method is one of the most scientific methods of studying behaviour.

It is the method which has assigned the status of science to psychology.

In experimental method, the experimenter conducts experiments using following steps:

1. Identifying problem

2. Developing hypothesis

3. Selecting an experimental design and standardizing the experimental procedure

4. Conducting experiment and collecting data.

5. Analysing data

6. Drawing conclusions.

Some of the important features of experimental method can be explained as follows:

1. Experimental method is one of the most objective methods of collecting data.

2. It enables accurate observations in controlled conditions.

3. Experimental method helps in finding out the cause-and-effect relationship between two or more variables.

4. The findings of the experimental method are verifiable.

1.4.2 Survey method:

A survey is defined as a research method used for collecting data from a pre-defined group of respondents (sample) to gain information and insights on various topics of interest such as political opinion, consumers’ preferences, etc.

Survey method makes use of questionnaires, checklists, rating scales, inventories, interviews etc. to collect the required information.

The Survey method is largely used by social psychologists, educational psychologists, industrial psychologists etc.

Survey method is an economic and an efficient method of data collection.

Surveys can be undertaken using email, telephonic calls or direct interaction with respondents.

1.4.3 Observation method:

Observation method is a research method which is very useful in the areas where experiments cannot be conducted.

It is a method in which behaviour is observed in a natural or laboratory setting.

Observation carried out in a natural setting is called natural observation and observation carried out in a laboratory setting is called controlled observation.

Observation method is widely used by child psychologists, clinical psychologist, social psychologists, etc.

Observation method can be treated as a scientific method and will be beneficial when it is used with the specific purpose of the research and planned in a systematic way.

1.4.4 Case study method:

Case study is one of the qualitative research methods used in psychology.

This method is mostly used by clinical psychologists.

Sigmund Freud and Jean Piaget were the two important figures to use case study method widely.

Case study is an in-depth look at an individual, group or a particular event.

Case study can be treated as a scientific method as it provides rich descriptive information often suggesting hypotheses for further studies.

In case study method, a researcher collects information about a particular individual (case) from multiple sources such as parents, family members, peers, teachers, colleagues, etc. to assess the individual’s current level of psychological functioning.

A researcher while using case study method may use several techniques like observation, interview, psychological tests, etc. to collect information about a particular individual.

1.4.5 Correlation studies:

There are certain scientific studies which make use of correlation as a statistical tool to understand the relation among variables.

Such studies are called correlational studies.

Correlation is a statistical tool used to measure the relationship between two or more variables.

If the change in one variable appears to be accompanied by a change in the other variable, the two variables are said to be correlated and this interdependence is called correlation.

The extent of correlation between two variables is measured by correlation coefficient.

A correlation coefficient is always a number between –1.00 to +1.00 The sign (+ or –) of a correlation coefficient indicates the direction of the relationship between the variables.

There are three types of correlation:

1. A positive correlation: When both variables either increase or decrease at the same time, they are said to have a positive correlation between them.

In case of positive correlation, the value of correlation is found between 0.00 and +1.00 For example, The amount of rehearsal and recall score.

2. A negative correlation: When an increase in one variable is associated with a decrease in the other and vice versa, they are said to have a negative correlation between them.

In case of a negative correlation, the value of correlation is found between 0.00 to -1.00 For example, amount of exercise and level of body fats.

3. A zero correlation: When any change in one variable brings no significant change in other variable, they are said to have a zero correlation.

In case of zero correlation, the value of correlation coefficient is found to be 0. For example, height and intelligence.

1.5 Challenges in establishing psychology as a science:

Although psychology is considered to be a scientific discipline, it has many controversies.

Controversies and criticisms of psychology have been made on theoretical, practical, ethical and philosophical grounds.

The following controversies and criticisms are the challenges in establishing psychology as a science: 1. Psychology in pre-paradigmatic state: In contrast to mature and natural sciences such as physics and chemistry, psychology is younger and a social science.

Though psychology is considered as a science, according to philosopher named Thomas Kuhn, psychology is still in a preparadigmatic state.

Psychology has not succeeded yet in producing a cumulative body of knowledge that has a clear conceptual core that is consequently agreed upon by experts in psychology.

2. Issues related to objectivity and validity:

Some areas of psychology such as personality, leadership, creativity, emotions, attitudes, etc. rely on "soft" research methods such as surveys and questionnaires, etc.

Methods such as introspection and psychoanalysis are inherently subjective.

Therefore, psychology to some extent falls short on the criteria of objectivity and validity.

3. Issues related to predictability and replicability:

A major goal of psychology is to predict behaviour by understanding its causes.

In psychology, making exact predictions is difficult as people respond differently in different situations.

Human behaviour is more difficult to study than particles and chemical compounds.

Therefore, the test results in psychology are more varied, harder to control and difficult to replicate.

4. Objectifying humans:

Some existential and humanistic psychologists from within the field criticizes that, by subjecting the human behaviour to experimentation, psychologists objectify persons.

Since it treats human beings as things, as objects that can be examined by experiments, psychology is sometimes portrayed as dehumanizing what is most essential about being human.

1.6 Importance of rationality:

Being a science, psychology tries to establish laws that govern human behaviour, at the same time it accepts the fact that human behaviour is dynamic and complex.

Some of our behaviours are commonly seen in others at the same time some of our behaviours are exclusive.

Attaining happiness is man’s greatest aim in life.

While achieving this aim, every individual feels, thinks and acts exclusively.

But while being happy one should see to it that one’s emotions, thoughts and acts do not get driven by irrational influences and one should not compromise on social norms, values and ethics for being happy.

Here the aspect of rationality comes in picture in psychology.

Sciences are appreciated by society when application of scientific knowledge improves the quality of life.

Like other sciences, psychology too helps in improving the quality of life by applying the concept of rationality in day-to-day life.

Stanovich and his colleagues while talking about rationality stated that, “Rationality involves adaptive reasoning, good judgement and good decision making.”

Sternberg and his colleagues while talking about intelligence suggested that Practical Intelligence can be defined as “the ability to perform successfully in naturalistic settings in a way that is consistent with one’s goal.”

Dr. Albert Ellis who proposed Rational Emotive Behavioural Therapy (one of the effective and popular method of intervention in the field of counselling psychology) has given values of rational living.

He also says that rational people are psychologically healthy people and they possess certain characteristics.

Some of them are given ahead:

1. Understanding self-interest and social interest:

‘Safeguard your self-interest and know others interest’ is almost like a slogan of Rational Emotive Behavioural Therapy.

Rational people understand what is self-promoting and what helps them to grow and they take responsibility of making those choices but at the same time take care of not violating other person’s rights and aid in survival of the society in which they live.

2. Self-direction:

Rational people assume primary responsibility for their own lives rather than demanding or needing excessive support or nurturance from others.

3. Tolerance:

Rational people are highly tolerant.

Tolerance is the willingness to accept behaviour and beliefs of others that are different from one's own.

Similarly, rational people accept one’s own and others’ right to be wrong.

4. Flexibility:

Rational people are found to be healthy individuals.

Rational people tend to be flexible, unbiased in their thoughts and actions.

5. Self-acceptance and self-responsibility:

Rational people accept themselves unconditionally rather than rating or proving themselves and also accept responsibility for their own thoughts, beliefs, feelings and behaviour.

According to Dr. Albert Ellis, rationality as a personal philosophy helps an individual to attain many goals in life and to be happy.

For being happy a person must BE RATIONAL.

This concept is explained with the help of the following table:

B (Balance) Balance between self-interest and interest of others

E (Estimate) Estimate the time, efforts, gains and losses

R (Respect) Respect oneself and others

A (Affiliate) Affiliate with others

T (Tolerate) Tolerate oneself and others

I (Integrate) Integrate personal wellbeing with social wellbeing

O (Optimize) Optimize potential fully

N (Navigate) Navigate path of success

A (Accept) Accept the limitations and overcome them

L (Live) Live life fully