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# Science Bridging Course

## Unit P5 – Self-test

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**In this chapter you will find out:**

- Test for self-study

# TEST FOR SELF-STUDY

- I. There are currently 6 billion people living on Earth. If 6 billion people gathered in one place, then the occupied territory would be close to:**
- 1) the area of Latvia;
  - 2) the area of Poland;
  - 3) the area of Germany;
  - 4) the area of Lithuania;
  - 5) the area of Estonia.
- II. Which concept science doesn't use:**
- 1) the mega-world;
  - 2) the micro-world;
  - 3) the giga world;
  - 4) the macro world;
  - 5) the meso world.
- III. On the basis of Judaism (Old law) and Christianity (New law), matter is separated from idea (God). God, the spirit is raised above nature. Nature is - the lord of idea. It is characteristic of:**
- 1) the ancient man;
  - 2) the medieval man;
  - 3) the person of an educational epoch;
  - 4) the 20<sup>th</sup> century person;
  - 5) the 21<sup>st</sup> century person
- IV. It is thought that the Sun will destroy the Earth in future. Stellar observation calculations carried out by astronomers show this. This can happen after:**
- 1) 1-2 billion years;
  - 2) 3-4 billion years;
  - 3) 5-6 billion years;
  - 4) 7-8 billion years;
  - 5) 9-10 billion years.
- V. The present living world is divided into kingdoms. At this moment there are:**
- 1) two;
  - 2) three;
  - 3) four;
  - 4) five;
  - 5) six.
- VI. The smallest structural and functional unit of the living world is:**
- 1) vacuole;
  - 2) organoid;
  - 3) cell;
  - 4) organ;
  - 5) cytoplasm.

**VII. A person according to human nutrition is:**

- 1) reducent;
- 2) consument;
- 3) producent;
- 4) producent and reducent;
- 5) all variants are correct.

**VIII. Which statement about human and nature relationship is probably wrong:**

- 1) Ecological situation aggregation causes economic growth;
- 2) The laws of nature and human world development are not identical;
- 3) Progressive production causes anxiety about natural resources;
- 4) Everything in nature is connected with each other in various different level relationships;
- 5) A lot of anthropogenic derivatives are found in the biosphere.

**IX. Which statement is wrong:**

- 1) Walking in the environment of gases is easy;
- 2) In order to move with solids, one has to clear the road;
- 3) It is much easier to move in liquids than in gases;
- 4) There are physical and chemical world cognition methods;
- 5) All of them are wrong.

**X. Which of the scientists was the first to state that space can be curved:**

- 1) Gibbs;
- 2) Gaussian;
- 3) Lobachevsky;
- 4) Ryman;
- 5) Euclid.

**XI. Einstein created:**

- 1) The basics of geometry;
- 2) The theory of classical mechanics;
- 3) The theory of electric charge interaction;
- 4) The theory of relativity;
- 5) The theory of electromagnetic induction.

**XII. Which statement about laws is probably incorrect:**

- 1) Any law of nature has a kind of necessity;
- 2) Scientific research has always to be purposeful;
- 3) Universality is characteristic of the law of nature;
- 4) Scientific laws are not the reflection of natural laws;
- 5) Scientific laws are discovered.

**XIII. The process of scientific concept creation is called:**

- 1) induction;
- 2) abstraction;
- 3) verbalisation;
- 4) differentiation;
- 5) idealisation.

**XIV. Visual and sign models in the modelling process are assigned to a certain group. This is:**

- 1) material models;
- 2) ideal models;
- 3) mathematical models;
- 4) theoretical models;
- 5) there is no correct answer.

**XV. Universal laws function in all spheres of existence and cognition They are researched by:**

- 1) physics, chemistry, biology;
- 2) psychology;
- 3) philosophy;
- 4) mathematics;
- 5) cybernetics.

**XVI. Performing a prediction function, science applies known laws to such phenomena, which are still not known. In other words, the scientific knowledge of one scientific subject is applied in a wider reality sphere which science does not yet know. This is:**

- 1) triangulation;
- 2) adaptation;
- 3) deflegmation;
- 4) extrapolation;
- 5) habilitation.

**XVII. Mass can be expressed in energy units -  $E=mc^2$ . This regularity was revealed by:**

- 1) Euclid;
- 2) Bohr;
- 3) Planck;
- 4) Coulon;
- 5) Einstein.

**XVIII. Which statement is incorrect:**

- 1) All bodies move, and they can change movement or stop with respect to each other only by action of force. If the bodies are not affected by additional force, they try to spread in space – the process of condensation;
- 2) We perceive the world because body interaction is taking place;
- 3) Bodies are different, therefore, interactions are different too;
- 4) The law of impulse persistence states that processes take place in an equal energy space.

**XIX. Earth is – a ball flattened over the poles. Its shape is not a regular ball. Its form is:**

- 1) haploid;
- 2) geoid;
- 3) asteroid;
- 4) tetragon;
- 5) octahedron.

**XX. Elementary particles are examined by:**

- 1) chemistry;
- 2) quantum physics;
- 3) biology;
- 4) synergetics;
- 5) cybernetics.

**XXI. I am the last alchemist because one atom can really be converted by another. This was said by:**

- 1) Coulomb;
- 2) Einstein;
- 3) Avogadro;
- 4) Rutherford;
- 5) Newton.

**XXII. There exist a lot of elementary particles. Currently, it is known about:**

- 1) 100;
- 2) 200;
- 3) 400;
- 4) 600;
- 5) 800.

**XXIII. The heliocentric solar system model was created by:**

- 1) Kepler;
- 2) Bohr;
- 3) Ptolemy;
- 4) Copernicus;
- 5) Galilee.

**XXIV. The fifth planet from the Sun (according to distance) is:**

- 1) Uranus;
- 2) Venus;
- 3) Mercury;
- 4) Jupiter;
- 5) Pluto.

**XXV. Science of self-organisation of systems, exploring complex system self- organisation processes, is:**

- 1) cybernetics;
- 2) semantics;
- 3) synergetics;
- 4) syntagmatics;
- 5) evolution.

**XXVI. Panspermia theory means that:**

- 1) Life appeared on its own;
- 2) Life was formed from coacervates;
- 3) Life was brought from space;
- 4) life appeared through a process of decay;
- 5) there is no correct answer.

**XXVII. There are different attitudes to progress in nature. The attitude asserting that all progress criteria are one-sided, unconvincing, in other words, the terms progress and regress are negative, is:**

- 1) Lamarckian;
- 2) Anti-Lamarckian;
- 3) Darwinian;
- 4) relativistic;
- 5) there is no correct answer.

**XXVIII. According to matter or energy exchange with environment, the systems are divided differently. If matter exchange is not possible, but energy exchange is possible, such system is:**

- 1) isolated;
- 2) adiabatic;
- 3) closed;
- 4) open;
- 5) partially isolated.

**XXIX. Which statement about living systems is correct:**

- 1) Information is both matter and energy;
- 2) Living beings are very disorderly dynamic systems;
- 3) Organisation degree of living systems may increase;
- 4) Living organisms work under isobaric conditions;
- 5) All living organisms and cells are thermodynamic semi-isolated systems.

**XXX. The main concept/characteristics/of cybernetics is:**

- 1) chaos;
- 2) entropy;
- 3) information;
- 4) isotherm;
- 5) isobar.

**XXXI. Which triad is logical and correct:**

- 1) Synergetics-cybernetics-thermodynamics;
- 2) Cybernetics-synergetics-biology;
- 3) Synergetics-cybernetics-evolution;
- 4) thermodynamics-cybernetics-semantics;
- 5) semantics-cybernetics-synergetics.

**XXXII. Which age did the scientists call the lifeless age of the mind:**

- 1) XIX;
- 2) XV;
- 3) XX;
- 4) XXI;
- 5) XVIII.

**XXXII. Which statement about the laws of science is incorrect:**

- 1) Scientific laws are discovered;
- 2) The content of scientific laws is subjective, and the form is - objective;
- 3) The discovery and formulation of scientific laws is related to the idealisation process;
- 4) Empirical scientific laws are derived referring to observations and experiments;
- 5) Science is a systematic, consequent process.

**XXXIII. Which statement about hypothesis is wrong:**

- 1) Hypothesis is – an assumption;
- 2) The correctness of the hypothesis is determined according to how it corresponds to the data of observations, experience, practice;
- 3) The hypothesis raised by the scientist is based on newly discovered facts, and has to be empirically tested;
- 4) Not all hypotheses are confirmed;
- 5) Statistical hypotheses are not scientific.

**XXXIV. The largest anthropoids are:**

- 1) chimpanzees;
- 2) macaques;
- 3) lemurs;
- 4) gorillas;
- 5) baboons.

**XXXV. An ideogram is:**

- 1) A painted pattern;
- 2) cuneiform ;
- 3) script writing;
- 4) gesture language;
- 5) there is no correct answer.

**XXXVI. Which statement is directly related to the struggle for existence:**

- 1) triangulation;
- 2) coagulation;
- 3) entropy;
- 4) elimination;
- 5) differentiation.

**XXXVII. The theory stating that God created the variety of organisms, denying the variability and evolution of organisms, is:**

- 1) Darwinism;
- 2) relativism;
- 3) creationism;
- 4) materialism;
- 5) anthroposophy.

**XXXVIII. Which process characteristic of this age is mentioned in Johannesburg declaration on sustainable development:**

- 1) marginalization;
- 2) globalization;
- 3) periodization;
- 4) geneticization;
- 5) there is no correct answer.

**XXXIX. Which statement about progress is wrong:**

- 1) The antipode of progress is – regress;
- 2) Progressive development is cumulative;
- 3) Progress takes place destroying some relations and elements of the system;
- 4) The first to raise the issue of progress was Lamarck;
- 5) Progress “does not carry” in itself any regress elements.

**XL. The age of Earth is more than:**

- 1) 1 billion years;
- 2) 2 billion years;
- 3) 3 billion years;
- 4) 4 billion years;
- 5) 5 billion years.

**XLI. The founder of cybernetics is:**

- 1) Plato;
- 2) Van Helmont;
- 3) Charles Darwin;
- 4) N.Viner;
- 5) Oparin.

**XLII. The essential characteristic of thermodynamics is:**

- 1) information;
- 2) management;
- 3) entropy;
- 4) diffusion;
- 5) balance.

**XLIII. The form of our galaxy is:**

- 1) ellipse;
- 2) disc;
- 3) octahedron;
- 4) square;
- 5) circle.

**XLIV. The world of relative mechanics is:**

- 1) Micro-world;
- 2) mezo-world;
- 3) macro-world;
- 4) mega-world;
- 5) there is no correct answer.