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CONTRIBUTIONS OF EASTERN THINKERS TO WORLD CIVILIZATION

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Abstract: This article deals with the enormous influence of our civilization on the development of the peoples of the East, Arab culture and Islamic philosophy. The establishment of states in its territory, which gained relative independence from the Arab Caliphate, has reached new heights due to the tolerance of our people. The article also says that our country has become a major center of culture and science in the world. The ninth and twelfth centuries were known as the Eastern Renaissance, during which scholars al-Khwarizmi, Ahmad al-Farghani, Abu Nasr al-Farabi, Ibn Sina, and Abu Rayhan al-Biruni worked in all fields of science.

Keywords: civilization, science, the process of cognition, the thinker, the laws of medicine, Islamic philosophy.

I. INTRODUCTION.

Today, the process of studying the unique contributions of Eastern scholars, especially Islamic scholars, to world civilization is becoming more important than ever. As our esteemed President Sh.M. Mirziyoyev said, there is no other country with such a rich history and great scholars as our ancestors. We need to study this heritage in depth and pass it on to our people and the world. [1] The influence of our civilization on the development of the peoples of the East, Arab culture and Islamic philosophy was enormous. The establishment of states in its territory, which gained relative independence from the Arab Caliphate, has reached new heights due to the tolerance of our people. Cultural and spiritual progress in the secular and religious spheres is a vivid example of this Renaissance. The traditions of the Avesto, the achievements in the study of nature, the positive developments in the humanities, have had a profound effect on the development of the peoples of the East, Arab culture and Islamic philosophy. At that time, the spiritual and intellectual prestige of our country grew in the world. It has become a major cultural and scientific center in the world.[2]

II. MAIN PART.

The ninth and twelfth centuries were known as the Eastern Renaissance, during which scholars al-Khwarizmi, Ahmad al-Farghani, Abu Nasr al-Farabi, Ibn Sina, and Abu Rayhan al-Biruni worked in all fields of science.

Muhammad al-Khwarizmi (783-850) and Ahmad al-Farghani (ca. 797-865) were great scholars who made significant contributions to the development of the natural and exact sciences throughout the Muslim East and the world. Muhammad al-Khwarizmi led the "House of Wisdom" ("Bayt ul-Hikma") in Baghdad, the capital of the Arab Caliphate. His works, such as The Table of Astronomy, The Handbook of Indian Calculus, The Handbook of the Sundial, The Handbook of Music, and A Concise Book on the Problems of Reconstruction and Resistance, focus on algebra in which the foundation was laid.

Among the peoples of the East, Ahmad al-Farghani was awarded the title of "Great Mathematician" and became famous in the fields of astronomy and mathematics. His work "A Book on the Movement of Celestial Bodies and the Complex of Astronomical Sciences", "Fundamentals of Astronomy", created a map of the universe. New data on the size of the Earth and space planets, climates, latitudes have been provided by observers, and new directions of science have been established. The generalization of the data obtained, the commonality of emotional and mental observation in the study, were important factors in shaping the worldview as characteristic of the scientist, and the impact of the scientists was felt even after they died.

The history of philosophy, science and medicine cannot be imagined without Farabi, Beruni and Ibn Sina. Abu Nasr al-Farabi (873-950) was a great thinker and scholar in the Muslim East who became the "second teacher" after Aristotle. He is the author of more than 160 works, mainly devoted to the interpretation of natural, scientific and philosophical problems in the works of ancient Greek scholars, as well as the analysis of current issues in these fields. The thinker interprets the world in two ways: "Existence is obligatory" (Allah) and "Existence is possible" (all material and spiritual things), and all things have the right to exist because of "existence is obligatory." They are causally connected to each other. Just as there is no cause without cause, there is no cause without cause, says Farabi.

The universe is expressed in terms of quality, quantity, ore, accident (insignificant property), opportunity, necessity and chance, space and time, movement and development. They come in six forms: cosmic bodies, intelligent beings (humans), insane animals, plants, minerals, and the four elements — water, fire, air, and earth.

The process of cognition occurs through the mind and intuition. The status of the science of reason and logic in cognition is incomparable.

Through the mind, man creates science. Thanks to science, the essence of events is revealed. Every science serves the specific needs of man.

In his works, the thinker put forward advanced ideas about the perfect man, the noble citizen, the just ruler, happiness, the ways to achieve it, the characteristics of the state, moral and intellectual education, social prospects. Farabi's influence on the development of Eastern philosophical thought was significant. [3]

Abu Rayhan Beruni (973 - 1048) was a great encyclopedic scholar and famous thinker who created in almost all fields of science. Of the 152 works he created, 28 have survived. His contribution to the study of nature is great. The gravitational pull of objects, solar and lunar eclipses, particle, inertia and artificial selection, developmental anomalies, geotectonic shifts in the depths of the Earth, the gradual change of the Earth's appearance, diversity - different worlds advanced scientific predictions about his philosophical views were influenced by his natural-scientific views. He focused on philosophical issues such as matter and time, law, necessity and chance, movement and development, conflict, cause and effect.

In Beruni's works, the issues of knowledge have an important place. There are two reasons for this curiosity. First of all, it's a unique flavor. Second, the purpose of knowing is to meet people's needs. Cognition begins with the information provided by the senses. They serve as a kind of helper and foundation for mental learning. The truth of knowledge is determined by observation and experiment. As a result, important aspects of objects are studied, their quantitative aspects are determined, and the efficiency of the cognitive process is increased.

According to Beruni, the human image is the result of nature. As for his inner appearance, it can be radically changed by endless human efforts. Everyone has their own personality. Society evolves through evolution. Justice, care for the citizen, the elimination of oppression, the management of society under the banner of reason and justice are the ideals of the thinker.

Abu Ali ibn Sina (980-1037) was a great scholar and thinker. He was born in the village of Afshona near Bukhara and died in Hamadan. The spiritual legacy of Ibn Sina is more than 280 names. They specialize in medicine, philosophy, logic, psychology, ethics, music, pharmacology, and more. His works such as "Book of Healing", "Laws of Medicine", "Book of Knowledge", "Pearl of Nature" are famous. In his interpretation of being, Ibn Sina follows in the footsteps of Farabi and admits that it consists of "obligatory existence" and "possible existence." The "obligatory existence" serves as the first cause. "Existence is possible" is a consequence of it. The "possible being" created because it was created is eternal. The scientist's views on causation are noteworthy. According to him, the causes are

material (a cause is that causes a certain situation), active (cause that changes a certain situation), formal (cause associated with different forces) and final (ultimate goal of all causes).

Ibn Sina, Zakariyya al-Razi, and Beruni were among the first in the history of world philosophical thought to pay close attention to observation and experience. For example, with their help, the scientist tries to solve the problems of the patient's condition, future mood, the composition of drugs, the relationship between man and the environment.

In his works, the thinker put forward interesting ideas about the harmony of science and morality, human perfection, happiness, social justice, human interaction, the duty of the ruler. He asserted that not all people have the same social status. In fact, it is necessary to create certain conditions for them. The fact that everyone is rich and powerful or everyone is poor is the downfall and crisis of society. But it is necessary to be kind and caring to others, to give generously and kindly to the needy when needed. [4]

Perfect human status, self-control, tolerance, religious wisdom, the natural-scientific ideas put forward in the research of Musa al-Khwarizmi and Ahmad al-Farghani in the teachings of mysticism, which were widespread in Central Asia in the early Middle Ages, Farabi, Beruni and Ibn Sina's natural-scientific and philosophical views, new directions in science have had a vital influence on the development of natural-scientific and philosophical thought, first of all, in the Muslim East, as well as in the whole world. [5]

At the end of the 14th and the beginning of the 15th centuries, Amir Temur's military campaigns led to the country's independence. The second phase of the Renaissance began during the reign of Timur and the Timurids. It was a time of great prosperity for science and culture. Spiritual patronage has grown. Examples of this are the establishment of the Ulugbek School of Astronomy in Samarkand, the construction of an observatory, and the scientific achievements of famous scientists Qazizoda Rumi, al-Kashi, Ali Kushchi and others.

III. CONCLUSION.

In short, the unique work of Eastern thinkers in the development of science has effectively influenced the development of the peoples of the East, Arab culture and Islamic philosophy, as well as cultural and spiritual progress in the secular and religious spheres. Proof of this is the growing spiritual and intellectual prestige of our country in the world at that time.

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**ANALYTICAL SOLUTION OF SIMPLE DIFFERENTIAL EQUATIONS
FIND OUT WITH THE MAPLE PROGRAM**
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Abstract: This article deals with the solution of simple differential equations using the Maple mathematical package using analytical methods, demonstration of this process in specific practical problems, the creation of algorithms and programs for solving the problem.

Keywords: Numerical solution, math package, maple, dsolve, method.

One of the areas of application of the computer remains the study of mechanical processes and mathematical models of objects using computational methods and computer software. The methods of computational mathematics and the modern capabilities of computers together serve to reveal the hitherto unknown features of mechanical processes and objects, and at the same time to improve technological processes.

Today, with the development of science and technology, the role of mathematics is growing. Mathematics is used in physics, mechanics and astronomy, as well as in solving economic problems, analyzing biological processes, and many other fields. The mathematical model of processes in these fields is called differential equations.

This scientific article deals with the application of computational mathematics and computers in scientific research and is scientifically and practically relevant (2). The paper deals with the problem of analytical and approximate solution of simple differential equations using the Maple program. The following is a sequential algorithm for problem solving and problem solving. Describe the calculation methods required to solve simple differential equations.