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PMS: 2022

- Q1 a) Write the contributions of at least five Muslim Scientists in the field of science.
- b) Briefly explain the impact of science on society with practical examples from daily life.

Throughout history, the Islamic Golden Age (8<sup>th</sup> to 14<sup>th</sup> centuries) saw an explosion of intellectual and scientific advancements.

Scholars from the Muslim world made remarkable contributions across various fields, including optics, medicine, mathematics, astronomy, and chemistry. The contributions not only influenced the course of scientific progress in the Islamic world but also had a lasting impact on western science.

The legacy of these Muslim scientists continues to shape modern scientific thoughts and discoveries.

**Five prominent Muslim Scientists who played a pivotal role in advancing science:**

# IBN-AL-HAYTHAM:

Ibn-al-Haytham known as the "Father of optics". He made groundbreaking contributions to the understanding of light, vision, and optics. His work on the behaviour of light and the development of the camera obscura laid the foundation for the modern study of optics and the invention of the camera.

Here are some key contributions of Ibn-al-Haytham:

## 1) Optics and the theory of vision:

His most famous book is his 'Kitab-al-Manazir' in which he made groundbreaking discoveries about light and vision. He challenged the prevailing Greek theory that vision was the result of rays emitted from the eyes. Instead he proposed that vision occurs when light rays emitted from eyes.

## 2) Astronomy: do not use one word headings.

He also worked in the field of astronomy. He corrected some of the astronomical models of his time and conducted research on the structure of the universe.

2) Ibn-i-sina Ibn Sina was a polymath who made numerous contributions to various fields, especially medicine. Some of his key contributions include:

1: The Canon of Medicine: His most famous

work "The Canon of Medicine" is a comprehensive medical encyclopedia that became the standard textbook in both the Islamic world and Europe for many centuries. It systematically classified diseases, outlined treatments, and laid the foundation for the study of human anatomy and physiology.

2: Pharmacology:

Ibn-sina significantly advanced the use of herbal and pharmaceutical treatments. His writings on plants and drugs laid the ground work for future pharmacology.

add and highlight references/examples against these arguments.

3) Al-Razi:

He was a pioneering Persian physician, chemist and philosopher whose work had a profound impact on the development of medicine and chemistry. Some of his key contributions:

1: Kitab-al-Hawi

Kitab-al-Hawi is Al-Razi's most famous medical work, often referred to as an "encyclopedia of medicine". It covered a wide array of medical topics, including diagnosis,

Treatments, and surgical techniques, and was used by scholars and doctors for centuries.

## 2: Philosophy and Rationalism:

Al-Razi was a rationalist philosopher. He emphasized observation and reasoning over dogmatic beliefs, advocating for scientific inquiry.

## 4) Al-Khwarizmi:

Al-Khwarizmi was a Persian mathematician, astronomer, and geographer, often referred to as the "father of algebra". He made groundbreaking contributions to mathematics, particularly in the development of algebra.

Key contributions of Al-Khwarizmi:

### 1: Algebra:

His most famous book "Al-Kitab Al-Mukhtasar fi Hisab al-Jabr wal Muqabala". This book introduced the term algebra and provided systematic methods for solving linear and quadratic equations.

### 2: Geography: in the field of geography

Al-Khwarizmi wrote a book on the geography of the known world "Kitab Surat al-Ard". This text provided detailed coordinates for various locations in the Islamic world and Europe.

5: Ibn-e-Khaldun: Ibn-e-Khaldun was a renowned Arab historian, sociologist, philosopher, and economist. best known for his work in the fields of historiography and social theory.

His contributions to the understanding of history, economics, and the rise and fall of civilizations have made him one of the most influential figures in the Islamic intellectual traditions.

His key contributions:

1: Muqaddimah: His most famous work is the Muqaddimah, also known as the introduction to history. This book is a groundbreaking treatise that outlines the theories on nature of history, society, and economics.

2: Economic Theorje

Ibn Khaldun made significant contributions to economic thought. He understood the importance of labor and production, and he examined the relationship between the state and economy.

6: Impact of science on society

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The impact of science on society is profound and can be seen on various aspects of our daily lives. Science not only shapes the technology and tools we use but also influences our health, education, communication, and environment. Here are some practical examples of how science affects society in everyday life:

## 1. Healthcare And Medicine:

### Vaccines and Medicine:

Vaccines, which are the product of scientific research, protect us from infectious diseases like measles, polio, and more recently, COVID-19. This has saved millions of lives globally.

## 2. Communication and Connectivity:

### Internet and smart phones?

The internet which relies on fields like computer science, electrical engineering, and telecommunications, has transformed the way we communicate, access information and conduct business.

## Transportation

### Cars, Air Travel and Public Transport

The development of the automobile is a prime example of applied physics and engineering. Cars, buses, and trains use principles of mechanics and thermodynamics to operate making transportation faster.

Moreover, Airplanes, which rely on principles of aerodynamics and engineering, have revolutionized travel by making long-distance

flight accessible and affordable.

Scientific innovations in navigation systems, materials science, and fuel efficiency have made flying safer and more efficient.

### 4) Agricultures

Scientific advancements in agriculture, such as genetically modified crops and precision farming, have increased food production and helped reduce hunger in many parts of the world.

## 5) Energy:

Renewable energy sources, like solar and wind power, are shaping how we generate electricity. These innovations help reduce reliance on fossil fuels and contribute to addressing climate change.

## 6) Entertainment:

From video games to virtual reality, science shapes how we entertain ourselves. Innovations in sound and visual technologies make movies and music immersive, and gaming has become a multi-billion-dollar industry.

improve the references, paper presentation and the headings quality part.

end with conclusion.