

Part - II

Benefits of Using AI in healthcare:-

- 1- AI improves the accuracy of diagnostics, leading to earlier and more precise diagnoses.
- 2- AI is beneficial in genetic diagnosis, by taking small amount of sample and doing PCR, so multiple test can be performed.
- 3- AI powered tools can minimize human error in diagnosis and treatment, leading to better patient outcomes and potentially lower costs.

Challenges of implementing AI:-

- 1- One of major challenge is of infrastructure. Infrastructure is costly and need maintenance. AI is operated by a special trained person under desired circumstances.

2- Exposure to wavelength which is hazardous for human health e.g. during lithotripsy.

3- X-Rays, CT-Scan.

3- If there is any metallic insertion in body then MRI can't be performed. Often the software bring the results in fragments and sometimes result are misinterpreted.

Impact of AI on patient care:-

1- AI helps the patient to recover fastly within short span and less pain.

2- AI has reduces the dependency of patient on human.

3- At the same time excessive use of AI causes cancer (abnormal growth of cells) and tumours (localized abnormal growth of cells).

Impact of AI on medical diagnosis :-

- 1- AI has shown high accuracy in detecting breast cancer on mammograms and more accurate diagnoses.
- 2- AI can also optimize medication dosages and predict treatment response, further personalizing care.
- 3- AI can also analyze large databases of patient records to identify patterns and predict potential health issues, enabling timely interventions.

Describe the Big Bang theory and its significance in understanding the origin and evolution of the universe. What are some key evidence supporting this theory.

Big Bang Theory:-

It is theory in astronomy which suggests that the universe originated billions of years ago in rapid expansion from a single point of nearly infinite energy density. It is the idea that the universe began as just a single point, then expanded and stretched to grow as large as it is right now - and it is still stretching.

Significance in origin and evolution of universe.

Origin:-

The universe started from a singularity, a point of infinity. Approximately 13.8 billion years ago there was massive expansion which resulted in the creation of all matter, energy, space and time.

Evolution:-

As the universe expanded it cooled, leading to the formation of subatomic particles and galaxies. Then gravity came in existence due to which planets and satellites revolve in their orbits.

Key Evidence:-

- i- Expansion of the Universe:-
Hubble's law discovered in the earlier 20th century states that galaxies are moving away from each other and the farther they are, the faster they recede. This observation of redshift, the stretching of light waves from distant objects, indicates that the universe is expanding, a fundamental prediction of the Big Bang Theory.

Cosmic Microwave Background Radiation:-

The CMB is a faint afterglow of the Big Bang, a uniform bath of radiation permeating the universe. This radiation is thought to be the remnant heat from the early, hot, and dense state of the universe:-

3- Abundance of light Elements:-

The big bang theory predicts specific ratios of light elements, such as hydrogen and Helium, that were formed in the early universe during a process called Big Bang Nucleosynthesis (BBN)

Q3. What are effects of Discuss the activities in global warming some potential mitigating

Global Warming

The emission of greenhouse gases in the earth's atmosphere. These gases are there is a

This is called

Causes:-

1- Fossil Fuels

The massive fuels, burning and purification of CO₂ is then atmosphere a

Q3. What are primary causes and effects of global warming? Discuss the role of human activities in contributing to global warming and suggest some potential strategies for mitigating its impacts.

Global Warming:-

The emission of greenhouse gases in the blanket of earth's atmosphere, when these gases are trapped then there is rise in temperature.

This is called global warming.

Causes:-

1. Fossil Fuels:-

The massive use of fossil fuels, burning of coal and oil refineries produces CO_2 . This CO_2 is then trapped in atmosphere and rise the temp.

2- Deforestation

The exploitation of forest has major contribution in depositing CO_2 in atmosphere. Forest are the sinks of CO_2 .

3- Intensive Farming:-

Use of fertilizers release methane gas and nitrous oxide which causes global warming.

4- Waste Disposal:-

Waste management methods like landfills and incineration emit greenhouse and toxic gases - including methane - that are released into the atmosphere, soil and waterways, contributing to the increase of greenhouse effect.

Effects:-

1- On Biodiversity :-

The increase of temp and climate upheavals disturb the ecosystems, modify the conditions and cycles of plant and animal reproduction. According to IPCC, a 1.5°C (34.7°F) average rise might put 20-30% of species at risk of extinction. If the planet warms by more than 2°C , most ecosystem will struggle.

2- On Oceans:-

Because of global warming, permafrost and ice are melting massively at the poles, increasing the sea level as observed. In a century increasing sea level reached 18cm. Infact large amount of CO_2 captured by the oceans makes more acidic.

3- On Human :-

Climate change is affecting the global economy. It is already shaking up social, health and geopolitical balances in many parts of world. Rising sea levels and floods are causing population migration. The estimated number of climate refugees by 2050 is 2050 million people.

Human Activities :-

1. Disobedience of Kyoto Protocol and Paris agreement, which aim to coordinate the global response to climate change
2. Burning of fossil fuels generates CO_2 .
3. Deforestation reduces the plant ability to remove greenhouse gases from atmosphere
4. Industrial ^{waste} and Transportation air

contributing significantly to fluorinated gases and greenhouse gases.

Strategies mitigating impacts of Global Warming:-

To mitigate global warming, strategies should focus on reducing greenhouse gas emissions and enhancing carbon sinks.

- 1- Shifting away from fossil fuels.
- 2- Investing in renewable energy infrastructure.
- 3- Reducing energy demand of non-renewable energy resources.
- 4- Promoting sustainable transportation.
- 5- Optimizing industrial processes.
- 6- Reforestation and afforestation.
- 7- Promoting sustainable agriculture.
- 8- Geo-engineering.
- 9- Public Awareness and behavioral changes.

Qd What are the key components of a disaster management plan? Discuss the importance of preparedness, response and recovery in mitigating the impacts of natural disasters. Provide examples of successful disaster management strategies.

Disaster Management Plan.

1. Development
2. Prevention
3. Pre Preparation.
4. Reaction
5. Rehabilitation

Importance of Preparedness:-

This phase focuses on planning and training for effective response. If the audience are prepared or infrastructure is designed according to this model loss can be minimize.

Importance of Response:-

The response phase involves immediate actions taken during a disaster to save lives, protect property and provide immediate relief.

Importance of Recovery:-

This phase focuses on restoring essential services, rebuilding damaged infrastructure, and helping affected communities return to the normal life.

Example:-

- Building Dams
- Building the infrastructure with material which can bear away Earthquake
- In Japan seismic resistant design are use in construction
- Basement is kept empty and next floor is kept higher

to avoid earthquake.

→ At the top of building there is heavy metallic bell which absorbs all the waves of earthquake and minimize the loss.

Q3a Describe the structure and Function of human heart. Explain cardiac cycle and the role of heart in maintaining blood circulation. How does the heart regulate blood pressure?

Structure of Human Heart:

Human heart is a muscular organ divided into 4 chambers 2 Atria, 2 ventricle. There are 4 valves which regulate blood flow between chambers.

The heart is composed of muscular tissue and is covered by protective sac called Pericardium.

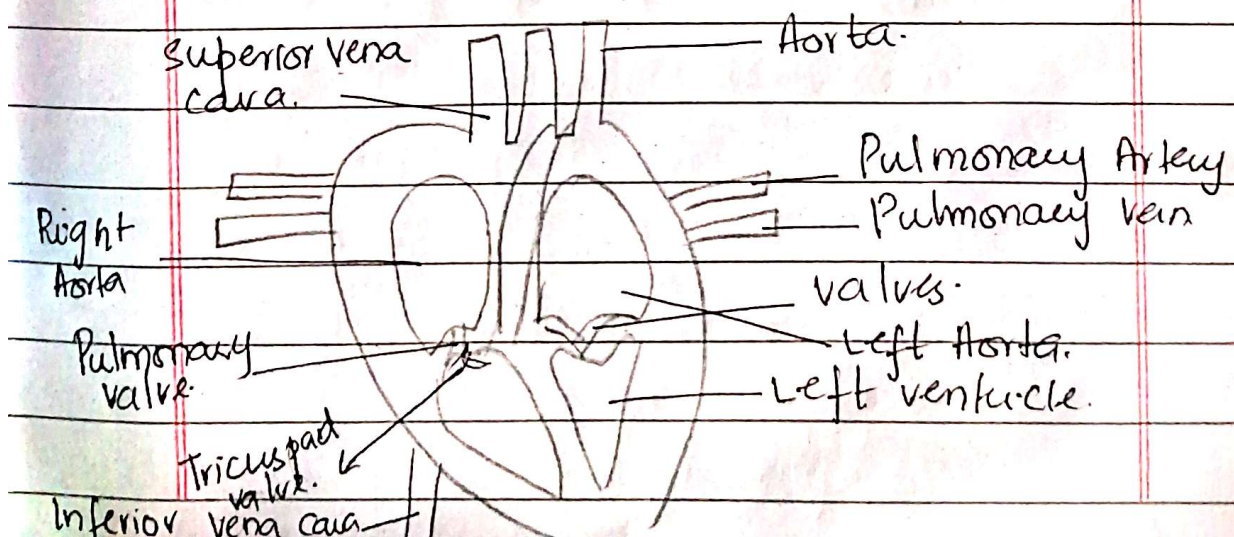
Functions:-

- 1- Deoxygenated blood from the body enters the right atrium through vena cava.
- 2- The right atrium pumps blood to right ventricle, which then pumps it to the lungs via pulmonary artery.

Oxygenation of Blood-

Oxygenated blood returns to the left atrium through the pulmonary veins.

- 2- The left atrium pumps blood to the left ventricle, which then pumps it out to the rest of body via aorta.



Cardiac Cycle:-

The cardiac cycle is a continuous sequence of heart muscle contraction and relaxation that results in blood flow throughout the body. It involves alternating periods of systole and diastole.

Regulation of Blood Pressure:-

Blood pressure is regulated by changes in cardiac output and stroke volume, which are influenced by factors like the autonomic nervous system and hormones.