Origin and Sructure of Earth

Que.1. The Zone of animal and plant kingdom comes under the subsystem of _____

a) Cryosphere **[Marks :(1)]**

b) Biosphere

c) Geosphere

d) Exosphere

Ans. b) Biosphere

Que.2. "Without Greenhouse Effect, the earth would be too cool for lifeto exist". Evaluate this statement and expalin how does the green house gases causes the green house effect. **[Marks :(4)]**

Ans. The major greenhouse gases (GHG's) solely responsible for greenhouse effect are Carbon dioxide, Ozone, Methane and Water vapor. Although these gases comprise 1% of our atmosphere, they act like a thick warm blanket outside that surrounds this planet and regulate climate control. Greenhouse effect is not bad. In fact, it is needed for all of us to survive on planet Earth. In short, the greenhouse effect is nothing but a naturally occurring process designed by nature that aids in heating earth's surface and helps to maintain ecological balance.

Now, while some of that heat dissipates into space, some of it burns along the atmosphere, and some of it penetrates the atmosphere and finds its way into the lower atmosphere and the planet's surface. This in turn raises the average temperature of the Earth. Therefore, the increase in the Earth's surface temperature due to increase in the number of greenhouse gases leads to global warming.

Que.3. Explain the importance of the following layers of the atmosphere in our day to day life. **[Marks :(4)]**

a)Ionosphere and Thermosphere

b)Troposphere and mesosphere

Ans. a)The ionosphere helps make long distance radio communication possible though reflecting the radio waves back at the earth.

The thermosphere performs several important functions, such as temperature regulation and filtering powerful X-rays and ultraviolet radiation emitted by the sun.

b)The troposphere holds nearly all of the water vapor in the Earth's atmosphere, regulates temperature and produces weather.

The mesosphere is important because it is the layer in which most asteroids burn up. Strange clouds and lightening occur in the mesosphere.

Que.4. In which layer of the atmosphere the Ozone layer is situated? **[Marks :(1)]**

a) Mesosphere

b)Troposphere

c) Stratosphere

d)Thermospere

Ans. c) Stratosphere

Que.5. The gaseous compsition of the atmosphere is expressed in percentage volume. Which is the gas makes up the largest portion of the atmospheric gases? [Marks :(1)]

a) Oxygen

b) Nitrogen

c) Hydrogen

d) Water vapour

Ans. b) Nitrogen

Que.6. Differentiate the terms given in the followingthe following. [Marks :(6)]

a) Weather and climate

b) Cryosphere and Hydrosphere

c) Homoshere and Heterosphere

Ans. a).Weather is the condition of the atmosphere at a particular place over a short period of time, whereas climate refers to the weather pattern, using statistical data, of a place over a long enough period to yield meaningful averages.

b) The hydrosphere contains all of Earth's bodies of water, such as an ocean, lake, sea, river, stream, etc. Cryosphere is the frozen part of hydrosphere

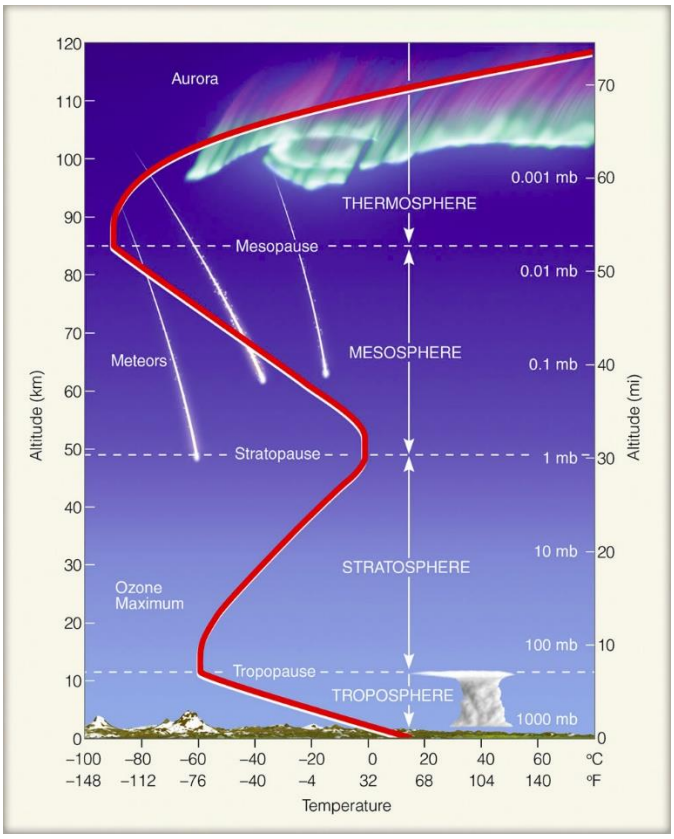
c) In the homosphere the concentration of gases remains the same throughout, and the gases are mixed, always in the same proportions. In the heterosphere the concentration of gases is different in different places, and the gases are typically in the form of layers, rather than mixed together.

Que.7. The earth is sorrounded by a blanket of air called atmosphere.The atmosphere begins at sea level and extends outward some 1000 km into space.The earth's atmosphere has divided into different layers.Draw a neat diagram showing the layers of the atmosphere and explain it brieffly. [Marks :(6)]

Ans. The atmosphere is divided into five layers. It is thickest near the surface and thins out with height until it eventually merges with space.

a) The troposphere is the first layer above the surface and contains half of the Earth's atmosphere. Weather occurs in this layer.
b) Stratosphere;-Many jet aircrafts fly in the stratosphere because it is very stable. Also, the ozone layer absorbs harmful rays from the Sun.

c) Mesosphere:-Meteors or rock fragments burn up in the mesosphere.
d) The thermosphere is a layer with auroras. It is also where the space shuttle orbits.
e) The atmosphere merges into space in the extremely thin exosphere. This is the upper limit of our atmosphere.



Que.8. The earth has two primary components, the geosphere and the biosphere.What are the components of the geosphere? [Marks :(2)]

Ans. The components of geosphere are the lithosphere, the hydrosphere, the cryosphere, and the atmosphere.

Que.9. The smallest time unit in the Geologic Time Scale is..... [Marks :(1)]

a) Eon

b) Era

c) Period

d) Epoch

Ans. d) Epoch

Que.10. Planets,satellites comets and asteroids are the members of the solar system.

a) Which is the comet that appears in the neighbourhood of the earth once in 76 years?

b) What are the celestial bodies that enter the earth's atmosphere from interplanetary space and burn with the particles of the earth's atmosphere? [Marks :(5)]

c) Name the three types of meteorites recognised based on their composition.

Ans. a) Halley's Comet

b) Meteors

c) Stony, Iron and Stony,Iron meteoroites.

Que.11. Fill in the blanks using the hints given. [Marks :(1)]

Mantle -Core boundaary :Guttenberg discontinuity

Crust - Mantle boundary :.....

Ans. Mohorovicic discontinuity/Moho

Que.12. The Hadean, Archean and Proterozoic eons are collectively called the..... [Marks :(1)]

a) Phanerozoic

b) Precambrian

c) Holocene

d) Mesosoic

Ans. b) Precambrian

Que.13. What is the characterstics the planet Venus? [Marks :(2)]

Ans. It is the hottest planet because of the high amount of green house gases present in it. It spins in clockwise direction.

Que.14. The icy zone beyond the planet Neptune in which most of the dwarf planets exist is known as ---------- [Marks :(1)]

Ans. Kuiper Belt.

Que.15. Differentiate between [Marks :(4)]

a) Comets and Asteroids

b) Meteors and Meteorites

Ans. a) Asteroids are smaller celestial bodies which revolve around the sun. Most of them have their orbits in between those of Mars and Jupiter. They are made up of rocky materials and have varying sizes and shapes.

Comets are smaller celestial bodies revolving around the sun in highly elliptical and elongated orbits.The majority of them spend most of their time in the outer reaches of the Solar System, only occasionally coming very close to the sun.

b) Meteors are small celestial bodies which enter the earth's atmosphere from interplanetary spaces and burns by friction with the particles of the earth's atmosphere, producing a streak of light across the sky.

Incompletely burnt meteors reaching the surface of the earth are called meteorites.

Que.16. Earth is the only planet in the solar system with abudant water and diverse forms of life. Man's expedition in outer space has provided strong evidence of earth like conditions in its immediate neighbouring planet, Mars. But there are no evidences of life on Mars. What are reason for the non existence of life on Mars? [Marks :(2)]

Ans. Although some of these recent developments have opened up a new era of exploration of our closest planetary neighbor, but we've always felt skeptical about non existence of life on Mars for a number of reasons, one of them being a glaring scarcity (to the point of non-existence) of water on the Martian surface. However, Mars hasn't always been devoid of water. There is not an atmosphere that supports life.

Que.17. Draw a neat sketch showing the internal structure of the earth based on physical characterstics. Name the various layers of the earth's interior. [Marks :(5)]

Ans. When considering the rocks of earth's interior in terms of their physical behavior, six layers can be differentiated from the surface to the core.

a) Lithosphere

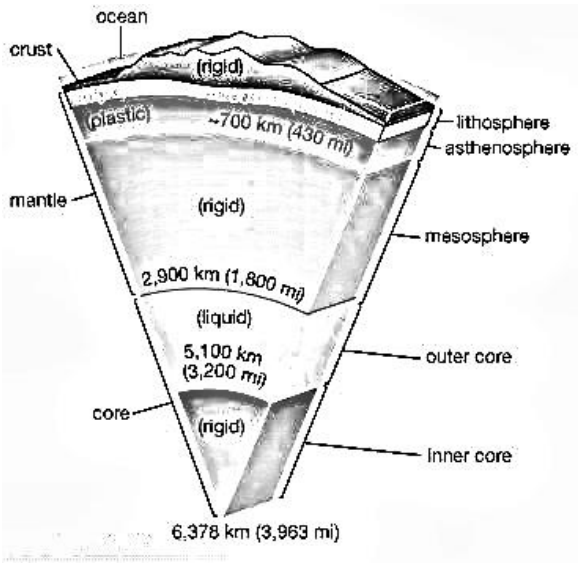
b) Asthenosphere

c) Upper mesosphere

d) Lower mesosphere

e) Outer core

f) Inner core



Que.18. The regularities in the composition of the planets and other members of the solar system suggest a common origin. Justify the above statement by describing any one of the hypothesison the origin of solar system. [Marks :(3)]

Ans. Nebular Hypothesis or Planetesimal Hypothesis- Major stages involved in the formation of the solar system-Single or dual parental hypotheses -Evolution of planets and their satellites-merits and demerits of the theories.

Que.19. A)Choose the pair among the following that is NOT correctly matched.

a) Age of universe : 13.7 billion years [Marks :(3)]

b) Age of earth :4600 million years

c) Nebular Hypothesis ; Chamberlin and Moulton

d) Origin of the Universe : Bing bang theory

B) Briefly comment on the origin of the earth according to the planetesimal hypothesis.

Ans. A) Nebular Hypothesis ; Chamberlin and Moulton

B) Planetesimal Hypothesis: primordial sun-near approach of a larger star-gravitational pull of the passing star-throwing of solar mass-planetesimals- collision and combining of planetesimals during their revolution-condensation -formation of planets

Que.20. Nebular and Planetesimal hypothesis are two important early hypothesis that attempted to explain the origin of the earth. [Marks :(4)]

Now,answer the following questions

a) Which hypothesis postulates an event of a near approach of a passing star?

b) Which hypothesis was originally proposed by the German Philosopher

Immanual Kant?

c) How did planets evolve according to the nebularl hypothesis?

Ans. a) Planetesimal Hypothesis

b) Nebular Hypothesis

c) Nebular mass- revolution in space-separation of nebular mass in the form of rings-gradual cooling-condensation-formation of planets.

Que.21. The Geologic period is divided into four grand divisions called eons. [Marks :(3)]

a) What are the two eons that come after Hadean and Archean ?

b) In which period does the Holocene Epoch fall?

Ans. a) Proterozoic and Phanerozoic

b) Quarternary