

General Science & Ability

Part - II

(Section - A)

Q. no. 4:-

Explain the role of heart and blood vessels in circulation?

Ans:-

The human blood circulation is dependent on human circulatory system. This system consists of

1. Heart

- Blood $\rightarrow$ RBC, WBC, plasma
- Blood vessels $\rightarrow$ Arteries, veins, capillaries

Role of Heart:-

Heart is the blood pumping organ. It is one of the vital organ for higher life forms. Heart is responsible for pumping blood in our circulatory system i.e blood vessels. Any disruption in heart's pumping can lead to death of individual. Heart is also responsible for supplying blood to lungs, kidneys, liver, brain and all other organs. Our oxygenation, blood filtration and blood detoxification occurs in these parts. Heart is responsible for providing fresh blood to all these organs.

Role of blood vessels:-

There are three types of blood vessels in circulatory system. Arteries that take blood away from heart, veins that bring blood back to heart and capillaries that are microvessels where exchange between cells happen.

The blood vessels provide pathway to blood to all parts of body. Any clot or rupture in blood vessels can lead to serious conditions that can be life threatening.

b- What is cyclone? Describe formation of cyclone.

Cyclone:-

Cyclone is a large, rotating storm system where winds spiral inwardly to an area of low pressure, known as "eye". They are accompanied by heavy rain fall, stormy winds and often thunder storm. They can be clockwise or counter clockwise depending on different hemispheres. They can be called a Hurricane, typhoon depending on their formation on land or sea.

Formation:-

Cyclones are formed due to

differences in atmospheric pressure, Earth's Coriolis effect and temperature difference between air and water.

1- Warm water:- When the water of oceans is above 26°C it can cause a cyclone.

2- Low-pressure Area:- This creates warm air which rises to sky and leaves a low pressure area.

3- Moist air:- The warm and moist air releases heat and cools down but this heat produces excessive low pressure.

3- Coriolis effect:- The earth's rotation around its own axis forces air to spiral in either clockwise (southern) or anticlockwise (northern) direction.

4- Eye:- This spiral further produces a low pressure area which is constantly fed by warm-moist air. This low pressure core is called "Eye". Speed of winds at core can reach over 300 km/hr at its center.

Q.C. Enlist Functions of -

Carbohydrates:-

Carbohydrates are an important group of macromolecules

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These are also called "sugars". They are vital for human survival. They release a good chunk of energy that can be released in form of ATPs. The carbohydrates are essential to maintain blood glucose level. This glucose - a carbohydrate - is used to provide instant energy to different parts of body.

Proteins:-

Proteins are structural blocks of body. They are present in bones, muscles, blood vessels and organs. These proteins also store energy but are used ~~at~~ as a last resort. Proteins form most of muscle mass and dry weight. They are responsible for performing important functions such as blood clotting (Fibrinogen), digestion (pepsinogen) and hormonal action.

Fats:-

Fats are also known as lipids. They are also a macromolecule. They include a large number of molecules. Fats have highest energy to mass ratio of any energy storing molecule. This makes them an essential source of nutrients. They provide essential nutrients to a seed. They also provide insulation from heat loss.

in mammals. The fats also provide structural support as well as prevention of water and nutrient loss at cellular level.

- Calcium:-

Calcium is an important mineral it provides strenghten to bones. It also helps in healing as well as maintaining nutrient flow across cell membrane.

- Iron:-

It is an important micromolecule it is necessary to strenghten bones. It helps in growth. It is necessary for good RBCs production.

Qd- How' remote sensing can be employed for environmental purposes?

Remote sensing:-

Remote sensing is a scientific technique where digitally signals of various kinds are recorded and then interpreted to get useful and accurate information. It can be used in Astrology, Environmental sciences, meteorology etc

Environmental use of remote sensing:-

A lot of important environmental details can be found with help of

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remote sensing.

- Geological survey:

Remote sensing can be used to check geological assessment of soil for EIA purposes.

- LADAR:-

LADAR can be used to check the nature of pollutants or survey of land. This can show ~~gaps~~ of environmental erosion.

- Thermal monitoring:-

Remote sensing can be done to find any life signs after a natural disaster.

- Radiation monitoring:-

Remote sensing can be used to see amount of radiation in air to check and monitor environmental impact of nuclear power plants or weapons.

Q. No. 5.

A- What is DRM? Give the importance of Risk assessment in DRM.
Disaster Risk Management-

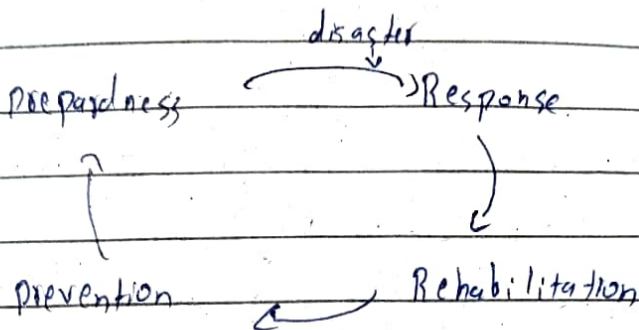
Disaster Risk Management or DRM is a four step management cycle. It is used to reduce ~~risk~~ damage of a disaster and improve response for next time.

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Steps in DRM:-

- 1- Response
- 2- Recovery / Rehabilitation
- 3- Prevention
- 4- Preparedness



Risk assessment in DRM:-

Risk assessment is part of response in DRM. The disaster is assessed and analyzed and potential hazards are identified. This provides enough ground to mobilize response teams, set up rehabilitation camps. This risk assessment also helps in planning prevention plan for future disasters.

D- ~~with~~ Define biofuels. Explain the production of biodiesel and bio gas?

Bio Fuel:-

Bio fuels are such fuels that are derived from bio mass. They are divided into different types such as biodiesel,

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biogas or bioethanol.

Bio diesel :-

Biodiesel is an environmental friendly alternative of ~~bio~~ normal diesel.

Production:-

Production of biodiesel requires a multi chamber equipment.

In first chamber H_2SO_4 is added alongside animal fat. These are mixed together thoroughly. Then it is moved to next chamber known as reaction chamber where a methanol is added as a catalyst. This cause transesterification of fats.

These mixtures are then moved to last separation chamber where oil (top layer) is extracted and mixed in normal diesel to make biodiesel. while rest is removed as glycerine.

Bio gas:-

Biogas is an environmental friendly alternative of natural gas. It is gained through extraction of naturally released methane from animal dung.

Production:-

Production of biogas is done in an underground chamber that is ~~att~~ has one broad and

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one narrow opening. In biogas plant first a mixture of dung and water known as slurry is poured in. This ~~slurry~~ Feeder is connected to digester. The digester is where biological breakdown of slurry happens. The methane is released. This methane is removed from digester and can be used to cook food while rest of sludge can be removed when required.

Q C- what is digestive system?
Explain role of stomach and small intestine?

Digestive system:-

It is an important system. It is used to digest complex molecules into simpler ones. These simpler molecules are then absorbed in blood and are transported to different parts of body. Digestive system consists of stomach, esophagus, small and large intestines and accessory glands/organs.

Stomach:-

Stomach is a J-shaped organ. It is used to digest proteins and fats with help of stomach acid. ~~and~~

Small intestine:-

It is a long tube about 6.5 meters long. It has three parts. It is used to digest fats, proteins and carbohydrates. It is used to absorb and nutrients. It also deacidify the bolus.

d. Define plastics. Give their properties applications and environmental risks associated with them?

Ans:-

Plastics:-

Plastics are a wide variety of synthetic materials such as polymers. They can be moulded into any shape while soft.

Properties and applications:-

Plastics are made from polymers. They are heat sensitive. They maintain their shape at normal temperature but at high temperature they start melting which makes them moldable. They are hard at normal temperature. so they can be used to make a wide range of products. They are excellent insulator of electricity. They are much cheaper to make and process which improve their economic value. Good

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plastics can last for centuries. The plastics are light weight compared to other materials such as metals. yet are quite sturdy.

Environmental risks:-

They take a long time, centuries, to decompose. They release Gases when burnt. Micro plastics can cause liver, kidney damage.

SECTION - B

Qno 6:-

A:-

Ans:- The woman is Ahsan's mother.

Reason:- The ~~granddaughter~~ of Ahsan's ~~mother~~ brother's only daug

The grandmother of Ahsan's brother's daughter (Ahsan's niece) is mother of Ahsan's and Ahsan's brother.

B:-

Given data:-

Ratio b/w length and breadth of a rectangular park is 3:2

Speed = 12 km/hr.

Time = 8 m.

area = ?

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distance covered in 8 minutes

$$= \frac{12000 \times 8}{60}$$

$$= 200 \times 8$$

$$= 1600 \text{ meter}$$

$$= 1.6 \text{ km}$$

let's say

$$l = a = 3x$$

$$b = b = 2x$$

$$1.6 \text{ km} = 2(3x + 2x) \quad (\text{area} = 2(l+b))$$

$$1.6 \text{ km} = 6x + 4x$$

$$1.6 \text{ km} = 10x$$

$$x = 0.16 \text{ km}$$

$$a = l = 3x = 0.16 \times 3 = 0.48 \text{ km}$$

$$b = 2x = 0.16 \times 2 = 0.32 \text{ km}$$

$$\text{area} = l \times b$$

$$= 0.48 \times 0.32 = 0.1536 \text{ km}^2$$

D- LCM of two number is 48

ratio is 2:3

$$\text{sum} = ?$$

$$2x + 3x$$

$$a = 2 \times 48 = 96$$

$$b = 3 \times 48 = 144$$

$$a + b = 240$$

The smallest possible number
 whose LCM is 48 will be 96 and
 144 -

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Qno 8:-

A:-

With given information it can be deduced that the order of houses will be

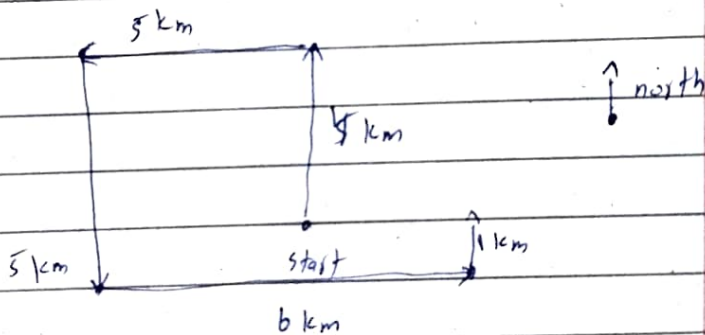
D, B, A, E, C

4 $\longrightarrow$ Rt

The A will be middle house

B:-

Given information:-



Total distance

$$= 4 + 5 + 5 + b + 1 \text{ km}$$

$$= 11 \text{ km}$$

Distance from starting point about 2 km East.

Direction:-

I will be running in north ward direction at end of my run.

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Finishing point -

Finishing point will be
in ~~west~~ east of ~~an~~ starting
point so I have to run westward.

Second turn:-

AFTER second left turn
I would be on southward travel.

C:- Find odd one out:-

d - THRSI

b - AOTC

c - EOUBSL

d - ICTRIS

e - RETAEWS

The e would be an odd
one cause RETAEWS in reverse
would be SWEATER while other
four in reverse doesnot make
any proper word.

D - Find triangles

The total of ten triangles
are possible in the given figure.

