

Muhammed Arham

IB-066

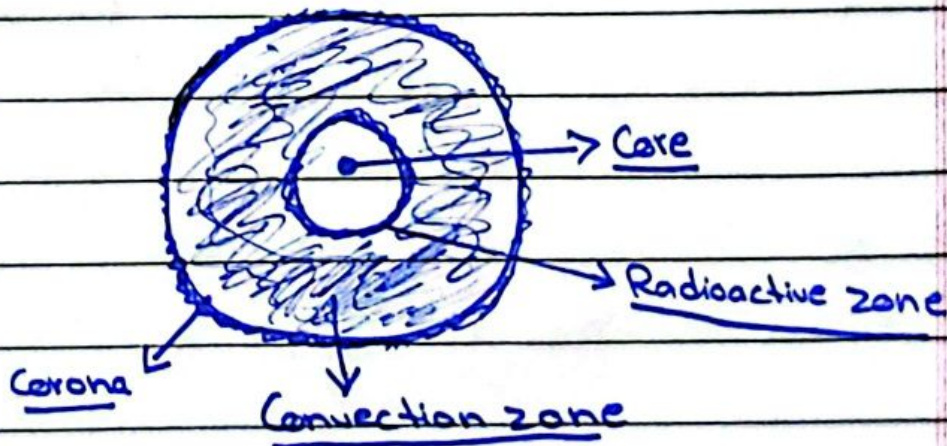
Roll # 34644

Mok Exam-6

GENERAL SCIENCE AND ABILITY

Question # 3

- * Part a. Explain and draw the structure of sun.



→ Explanation:

The sun is the largest body in our solar system. It is a burning star of gases.

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and it is the main supplier of energy to the planets.

It holds 99.8% of the whole mass of our solar system.

Different parts of sun's structure are as following:

1) **Core**: It is central part of sun where fusion takes place and generates energy.

2) **Radiative zone**: In this area, energy moves outward from core in the form of electromagnetic radiation.

3) **Convection zone**: In this part, hot plasma rises and the cold plasma sinks, creating a convection current.

4) **Corona**: It is the outermost layer of sun, extending into space and easily visible during eclipses.

* Part b: What is tsunami? How it is generated? Give examples of a few recent tsunamis.

The word Tsunami is taken from two Japanese words;

"tsu" which means 'harbor' and
"name" which means 'wave'. So
literally it means 'Harbor Wave'.

A tsunami is a large,
powerful ocean wave caused
by the displacement of
huge of water, causing destruction.

2 → How it is generated?

Tsunami is generated when
a large amount of water is
displaced from its position
usually because of underwater
earthquake, volcanic eruption or
due to any landslide. This
disturbed cause the water waves
to displace and when these
waves hit the coastal belt, they
took height and became a
reason for the destruction.

2 → Recent tsunamis

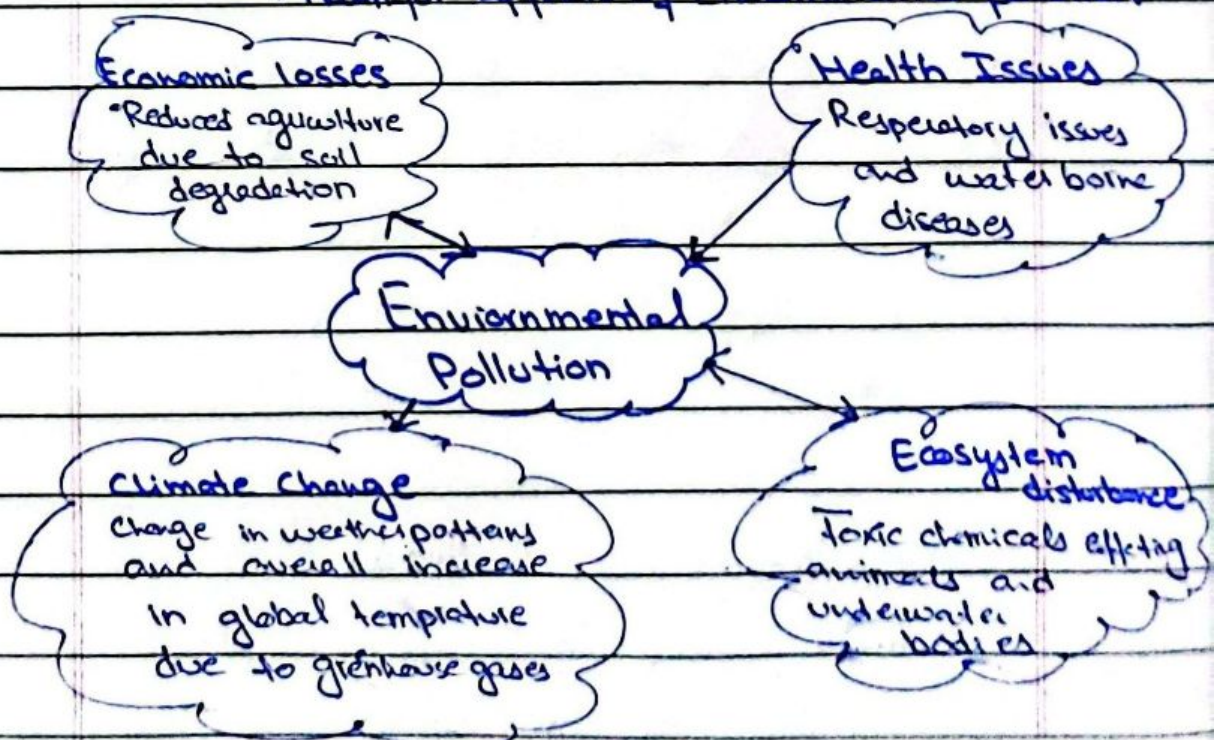
- Tohoku Tsunami, Japan, 2011
- Sulawesi Tsunami, Indonesia, 2018
- Indian Ocean Tsunami, 2004

- a Part C. Discuss environmental pollution.
What could be its harmful effects?
Give a few measures to curb it.

Environmental pollution

Anything hazardous present in the atmosphere which causes adverse effects on ecosystem, human health and an overall quality of life is termed as environmental pollution. It occurs in various forms, such as air pollution, noise pollution, land pollution and water pollution.

→ Harmful effects of Environmental pollution

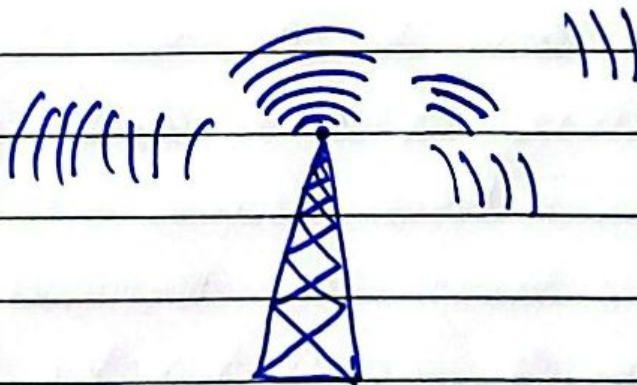


2 → Measures to Curb Environmental Pollution

- 1) Implementing strict policies to reduce the use of fossil fuels.
- 2) By adopting effective waste management system.
- 3) Afforestation, to absorb the excess amount of CO_2 in the air.
- 4) Through public awareness and campaigns.

* Part d: What is wireless communication?

Briefly explain the working of a satellite.



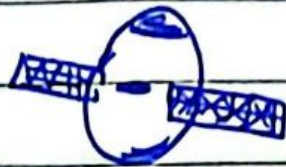
2 → Wireless Information/Communication

Wireless communication refers to the sharing of information, data and instruction without

any physical medium (such as wire). It relies on electromagnetic waves, radio waves, microwaves and infrared waves to transmit data over larger distance.

2 → Examples: Mobile phones, Wifi, Bluetooth, and Satellite Systems.

2 → How a Satellite Works



A satellite is a man-made object which orbits around the earth to send data to its receivers.

In the working of satellites, following steps are included:

1) Uplink: Also known as transmission from earth. It means that the input or commands are sent to the satellite to provide information accordingly.

2) Onboard processing: In this step, satellite receives the signal through

its antennas, processes it and converts the signal as needed.

3) Downlink: This refers to the transmission to earth. In this step, satellite provides all the necessary details to the specific receiving station on earth.

Question # 5

* Part a: Differentiate between a eukaryotic and a prokaryotic cell.

Eukaryotic

Prokaryotic

Size

• It is larger in size (10-100 μm)

• It is smaller in size (1-5 μm)

Nucleus

• It has a nucleus

• It does not possess nucleus.

DNA

• It has linear DNA organized into chromosomes.

• Circular DNA without histones.

Ribosomes

• Large ribosomes

• Small ribosomes

Cell Division

• Mitosis or meiosis

• Binary fission

Cell Wall

• Present only in plant cells.

• Present in most prokaryotics.

Reproduction

• Both sexual and asexual reproduction

• Only asexual reproduction

Examples

• Plants, Animals, Fungi and protists.

• Bacteria and archaea.

* Part b: What is global warming? What is Kyoto protocol?

→ Global Warming

Global warming refers to the average increase in the

temperature of the earth due to the accumulation of greenhouse gases, such as Carbon dioxide (CO_2), Methane (CH_4) and Nitrogen oxide (N_2O) in the atmosphere.

→ Effects of global warming:

- Increasing average temperature of the earth.
- Frequent change in weather patterns
- Ecosystem disruptions and loss of biodiversity.
- Severe threats to food security and human health.

2 → Kyoto Protocol

Kyoto Protocol is an international treaty adopted in 1997 under the United Nations Framework Convention on Climate Change (UNFCCC), to combat global warming by reducing greenhouse gas emissions.

Key features of Kyoto Protocol:

- 1) Developed countries committed to

reduce carbon emission.

2) Tools like carbon trading and clean development mechanism (CDM) come into being.

* Part C: Write a detailed note on GIS.

GIS stands for Geographic Information System and sometimes also called Geographic Information Science. It is a framework that combines the hardware, software and data to get useful geographic information. It is widely used by environmentalists. However, its applications also includes the users to get visuals in the form of maps, reports, charts and patterns.

→ Functions of GIS:

1) Data Collection: It collects data from the satellites.

2) Data Storage: It stores data in

its database for efficient retrieval.

3) Data Analysis: Performs spatial analysis to identify patterns, relationships and trends.

4) Visualization: Creates maps, 3D models and reports to present the analyzed data to the user.

5) Decision Support: Assists in making decisions according to the current situation. It helps in urban planning, disaster management and natural resource management.

* Part d: Briefly describe antioxidants.

2 → Antioxidants

Antioxidants are the substances which slow down or prevent the damage to cells caused by free radicals. By neutralizing free radicals, it helps in the protection from the oxidative stress, which is

linked to aging and various chronic diseases.

→ Sources of Antioxidants

Antioxidants are produced by the body naturally, such as glutathione, and can even be obtained from external resources such as vitamins, minerals and other nutrients.

→ Roles of antioxidants in human body/Health

Antioxidants reduce the oxidative damage to LDL cholesterol. It also protects the cells from DNA mutations, which causes cancer and it protects against age-related macular degeneration and ~~cataracts~~ cataracts.

SECTION II

Question # 7:

(a)

1) I.Q

I.Q stands for Intelligence Quotient. It refers to measures to cognitive abilities of any person, like logical reasoning, problem solving and intellectual potential. It also focuses on mental capacities such as analytical skills and mathematical abilities.

2) E.Q

E.Q stands for emotional quotient. It measure the emotional intelligence, including the ability to recognize, understand, manage and to solve the real time problem. It is important for interpersonal relationships, leaderships and dealing with stress.

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(Part b)

Solution:

Let the age of Amen = x After 20 years = $x + 20$ 10 years ago = $x - 10$

According to the statement:

$$x + 20 = 10(x - 10)$$

$$x + 20 = 10x - 100$$

$$20 + 100 = 10x - x$$

$$120 = 9x$$

$$x = \frac{120}{9}$$

$$x = 13.3 \text{ Ans.}$$

P.W
9/18/16

(Part c)

Solution:

Peter = 40 minutes

John = 60 minutes

Together = x

To find x , we have to find their
agrate.

$$\text{Peter's rate} = \frac{1}{40}$$

$$\text{John's rate} = \frac{1}{60}$$

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$$\rightarrow \text{combine rate} = \frac{1}{40} + \frac{1}{60}$$

$$= \frac{3+2}{120}$$

$$= \frac{5}{120}$$

$$= \frac{1}{24}$$

$$= \frac{1}{24}$$

$$= \frac{1}{24}$$

\rightarrow Time is the reciprocal of their combined rate, so

$$= \frac{1}{\frac{1}{24}} = 24$$

• Hence, both will take 24 minutes to mow the lawn together.

(Part d)

Solution:

Let the original no. be - N

$$\text{Correct result} = N \times \frac{5}{3}$$

$$\text{Incorrect result} = N \times \frac{3}{5}$$

To calculate error,

$$\text{Error} = \left(N \times \frac{5}{3} \right) - \left(N \times \frac{3}{5} \right)$$

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$$= N \left(\frac{5-3}{3 \quad 5} \right)$$

$$= N \left(\frac{25-9}{15} \right) = N \left(\frac{16}{15} \right)$$

→ To calculate percentage error

$$= \frac{\text{Error}}{\text{Correct result}} \times 100$$

Correct result

$$= \frac{N \times \frac{16}{15}}{N \times \frac{5}{3}} \times 100$$

$$= \frac{16 \times 3}{15 \times 5} \times 100$$

$$= \frac{16 \times 3 \times 20}{15 \times 5 \times 81} \times 100$$

$$= \boxed{64\%} \quad \text{Ans.}$$

Question # 8

(Part a)

Solution:

$$\text{length of classroom} = 15 \text{ ft}$$

$$\text{width} = 60\% \text{ of } 15 \text{ ft}$$

$$\text{dimension} = ?$$

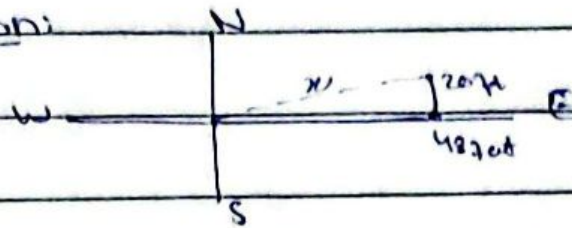
As we know that,

$$\text{width} = \frac{60}{100} \times 15 = 9$$

$$\text{width} = 9 \text{ feet}$$

Hence, length = 15 ft and width = 9 ft Ans.

(Part b)

Solution:

$$\text{veena ran to east} = B = 487\text{ft}$$

$$\text{then veena ran to north} = P = 207\text{ft}$$

$$\text{straight distance} = H = ?$$

According to Pythagorean Theorem

$$H^2 = B^2 + P^2$$

$$H^2 = (48^2) + (20)^2$$

$$H^2 = 2304 + 400$$

$$H^2 = 2704$$

$$\sqrt{H^2} = \sqrt{2704}$$

$$H = \underline{52} \text{ Ans}$$

Hence, veena would run 52 feet.

(Part c)

Solution

$$\text{Total Students} = 40$$

$$\text{Average marks} = 52.14$$

$$\text{Total marks} = 40 \times 52.14$$

$$= 2086$$

• Correction in number of a student

$$= 85 - 49, = 36$$

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$$\begin{aligned} \text{New Total marks} &= 2086 + 36 \\ &= 2122 \end{aligned}$$

$$\text{Average} = \frac{2122}{40}$$

$$= \underline{53.05} \text{ Am.}$$

(Part d)

Solution:

$$\text{people who like veg. pizza} = 37$$

$$\text{people who like chick pizza} = 25$$

$$\text{people who like neither} = 3$$

$$\rightarrow \text{Total no. of people who like pizza}$$

$$= 25 + 37 - 3$$

$$= 59$$

\rightarrow To calculate probability

$$\text{people who like chicken} = 25$$

$$\text{Total no. of people} = 59$$

$$\text{So, } \frac{25}{59} \text{ is the probability.}$$