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Subject : General Sci & Ability

Follow solution step by step
solution method for maths
portion

Given data (Section. II)

To find out

Solution

Q. no. 6

Include diagrams in answers

(b)

A man ordered pizza.

No. of persons = 18

No. of pizza slices = $x = 18$

Ratio in which slices are divided

~~2 : 3 : 4~~

Hence 2 parts of 18 = 4

and 3 parts of 18 = 6

and 4 parts of 18 = 8

so slices are divided in the ratio

4 : 6 : 8

If the weight of a single slice is 40g :

then $4 \times 40g = 160g$

and $6 \times 40g = 240g$

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$$\text{and } 8 \times 40 \text{ g} = 320 \text{ g}$$

Now by adding these we get = $160 + 240 + 320$

Total weight of pizzas = 720 g **Ans I**

Now if the price of small pizza is Rs 320

As we mentioned earlier small pizza has

$$\text{four slices then } \frac{320}{4} = 80 \text{ Rs/slice}$$

Adding the price to other sizes.

$$\text{Medium pizza} = 6 \times 80 = 480 \text{ Rs}$$

$$\text{Large pizza} = 8 \times 80 = 640 \text{ Rs}$$

$$\text{Adding all 3 values} = 320 + 480 + 640$$

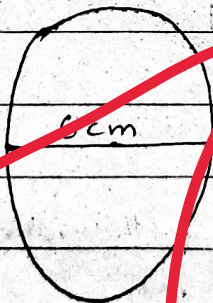
$$\text{Total price} = 1440 \text{ Rs} \quad \text{Ans II}$$

(C)

Diameter of a circle is 6cm

Find circumference and area of circle.

Ans:



$$\pi = 3.14$$

As we know Circumference = $C = \pi \times d$

$$C = 3.14 \times 6 \text{ cm}$$

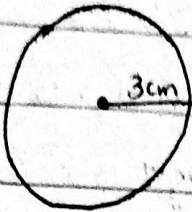
$$C = 18.84 \text{ cm}$$

Now

$$\text{Area} \Rightarrow A = \pi r^2 \quad (\text{radius} = r)$$

to find radius we divide diameter into half

$$r = \frac{d}{2} = \frac{6}{2} = 3 \text{ cm}$$



By putting value of r ,

$$A = 3.14 \times (3)^2$$

$$A = 3.14 \times 9$$

$$A = 28.27 \text{ cm}^2$$

(d)

Identify the missing

i) 13, 24, 46, 90, 178, _____

Find the difference,

$$13 \rightarrow 24 = 11 \text{ points}$$

$$24 \rightarrow 46 = 22 \text{ points}$$

$$46 \rightarrow 90 = 44 \text{ points}$$

It is observed that the difference between

the two points is multiplied by 2 to get to the next point.

$$\text{if, } 11 \times 2 = 22, \quad 22 \times 2 = 44$$

then

$$13 \xrightarrow{11} 24 \xrightarrow{22} 46 \xrightarrow{44} 90 \xrightarrow{90} 178 \xrightarrow{190} 368$$

By multiplying 190×2 we get $= 368$ - Ans

P.T.O

ii) 5, 6, 9, 14, 21, _____

Find the difference

$$5 - 6 = 1$$

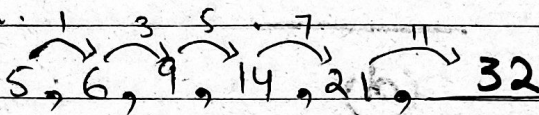
$$6 - 9 = 3$$

$$9 - 14 = 5$$

It is observed that odd number series is followed to find the next digit in the row.

4. Odd number = {1, 3, 5, 7, 11}

then:



$$21 + 11 = \boxed{32} \text{ Ans II}$$

Q.no.7

(a)

Distinguish IQ and EQ:

IQ

EQ

Intelligence quotient	Emotional quotient
<p>Given by:</p> <p>1. Alfred Binet</p> <p>Conceptualization:</p> <p>2. It is a test used to judge the cognitive abilities of a person</p>	<p>Given by:</p> <p>1. Daniel Goleman</p> <p>Conceptualization:</p> <p>2. It is a test used to judge the emotional capabilities</p>

It measures the analytical skills, reasoning abilities and logical conclusion finding ability of a person.

Application:

Mostly required for educational purposes.

Variation:

It is an inherited trait remains relatively stable throughout life.

Formula:

$$IQ = \frac{\text{Mental Age}}{\text{Chronological Age}} \times 100$$

of a person. It measures the ability of a person to control and regulate his actions and reactions, compassion, empathy and grasping.

Application:

Mostly required to treat a person, to boost or reduce any ability.

Variation

It is a socially constructed phenomenon it can be enhanced overtime.

Formula:

$$EQ = W \times IQ$$

Where W = wisdom

(b)

What is the present back?

Present age of Adam = x

Age after 20 years = x + 20

Age 10 years ago = x - 10

P. T. O

and, After 20 years Aman's age will be
10 times of his age 10 years ago:

then

$$\text{eq-1 } x + 20 = 10(x - 10)$$

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

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

$$120 = 9x$$

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

by dividing 120 by 9

$$\text{we get } = 13.33$$

$$\begin{array}{r} 13.3 \\ 9 \overline{) 120.30} \\ \underline{27} \\ 30 \\ \underline{27} \\ 30 \\ \underline{27} \\ 30 \\ \underline{27} \\ 30 \\ \underline{27} \\ 30 \end{array}$$

$$\frac{13}{9} = \frac{13}{17}$$

So,

the Approx age of Aman at present
is 13 years and 4 months.

(C)

Peter can mow the lawn together.

$$\text{Peter can mow} = \frac{1}{40} \text{ lawns per minute}$$

$$\text{John can mow} = \frac{1}{60} \text{ lawns per minute}$$

$$\text{If they work together} = \frac{1}{40} + \frac{1}{60}$$

$$\text{Take L.C.M} = \frac{3 + 2}{120} = \frac{5}{120}$$

$$\text{By solving it we get} = \frac{1}{24}$$

If they both will mow together they will

take 24 minutes for that particular lawn.

(d)

A person multiplied ----- calculation.

To find error

$$\% \text{ error} = \frac{\text{Actual value} - \text{Incorrect value}}{\text{Actual value}} \times 100$$

By putting values

$$\text{Actual value} = x \times \frac{5}{3}$$

$$\text{Incorrect value} = x \times \frac{3}{5}$$

Hence, first take difference

$$= x \times \frac{5}{3} - x \times \frac{3}{5}$$

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

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

$$= x \times \frac{16}{15}$$

By putting values into the formula

we get

$$= \frac{\frac{16}{15} x}{\frac{5}{3} x} \times 100 \rightarrow \text{by cutting both } x$$

we get,

$$\frac{16}{15} \times \frac{3}{5} \times 100 \quad \text{by multiplying}$$

$$\text{We get } \frac{48}{75} \times 100$$

Date: _____

Day: _____

$$\frac{4800}{75}$$

by dividing

$$\begin{array}{r} 64 \\ 75 \overline{) 4800} \\ \underline{450} \\ 300 \\ \underline{280} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

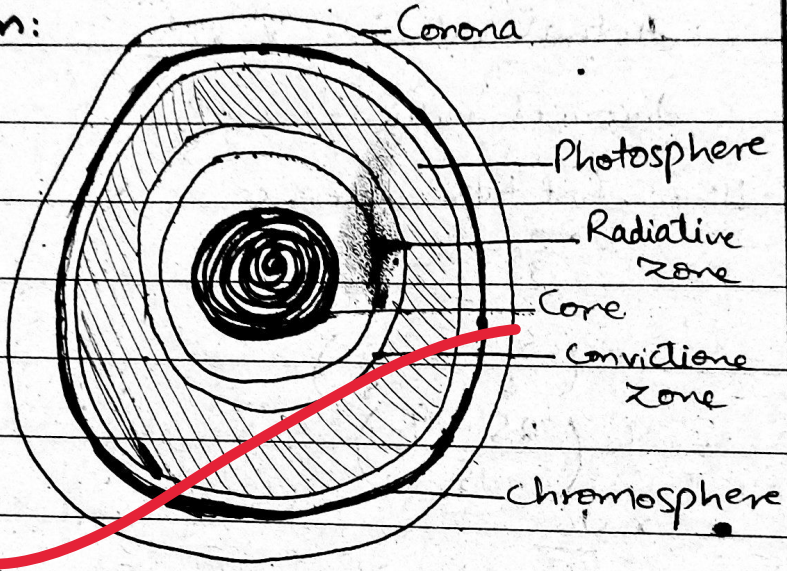
Aproximately 64% error is found.

(Section I)

Q. no. 3

Explain and draw structure of Sun

Diagram:



Sun: "Sun is the central star of solar system and primary source of light and heat for Earth and other planets orbiting him."

Mars: Its mass is 330,000 times of Earth.

Temperature:

Its different layers have different temperatures the temperature at core is highest ranging from

15-16 million Kelvin and the temperature at corona, the outer layer is 1-3 million Kelvin.

Composition:

It is composed of 74 percent H_2 (Hydrogen), 24 percent He (Helium) and 2 percent heavy metals.

Parts of Sun:

1. Core:

It is the inner most part where fusion reaction is taking place Hydrogen fuses to form Helium gas. It is important to provide warmth in the whole solar system.

2. Radiative zone:

Here photons break and release a large amount of energy required to push heat out of the body of sun.

3. Convection zone:

Here hot plasma rises and

and cooler plasma sinks thus maintaining the density of sun.

4. Photosphere:

It emits light to the whole solar system. It is the visible zone that can be seen from Earth.

5. Chromosphere:

It is a reddish thin layer only visible during solar eclipse.

6. Corona:

It is the outermost and the biggest layer of sun that is spread in thousands of kilometers in space and is visible in total solar eclipse only.

(b)

What is tsunami - - - - - tsunami

Tsunami:

"It is a series of large ocean waves caused by sudden displacement in ocean beds and near the coast."

P.T.O

Causes of generation of tsunami:

1. Earthquakes can cause the waves of water to displace due to the movement of tectonic plates in ocean beds.
2. Volcanic eruption can be a source of causing tsunami, particularly when underwater volcano erupts.
3. Landsliding or rock fall in ocean can throw a big part of ocean water out.
4. Meteorite impact can cause tsunami by its gravitational pull over the surface of ocean causing waves to rise high in the sky and fall over nearby coastal areas.

Examples:

1. 2023 - Turkey - Syria Tsunami
2. 2022 - Tonga tsunami in Pacific ocean
3. 2018 - North-east coast of US
4. 2016 - In Japan

P.T.O

(C)

Define environmental _____ curb it

Environmental Pollution:

It is the introduction of harmful substances or pollutants into natural ecosystem causing adverse effects on human health, bio diversity and overall planet.

Types of environmental pollution:

- 1 - Air Pollution
- 2 - Water Pollution
- 3 - Soil Pollution
- 4 - Noise Pollution
- 5 - Thermal Pollution
- 6 - Radioactive Pollution

Impacts/Effects:

1 - Acid rain:

The droplets in air carry poisonous gases and smoke present in the air and when this rain fall on plants it causes plant death or atleast leave malfunction. Apart from causing skin and eye infections in human's and

animals.

2. Smog:

The combination of smog and fog due to extreme burning of crops reduces visibility and causes breathing problems mainly coughing.

3. Soil erosion:

Polluted water, acid rain and dumping of solid waste into fields causes accumulation of harmful metals in land that reduces the agricultural yield and decreases fertility of soil.

4. Diseases in living beings:

Oil spill in oceans causes severe choke in marine life ecosystem.

Air and water pollution causes lung diseases, oral problems, Cholera, typhoid, eyes and nose infections and reduces life expectancy and fertility. In short it damages the whole eco-system which is the only places to live.

Measures to reduce environmental pollution and a safe future:

P.T.O

1. Personal precautions

By washing hands, wearing masks and goggles, drinking safe water.

2. Renewable energy resources:

By using the coal, dung, air, water and thermal resources to produce power rather than fossil fuel consumption.

3. Use of public transport and electric cars

To reduce the consumption of leaded petroleum and emission of CFC's (Chloro-floro carbons)

4. Afforestation:

By launching further programs like billion tree tsunami to manage the carbon density in air.

5. Reduce - Reuse - Recycle:

Reduce polluting the environment further, reuse plastics and other substances that do not decompose easily and recycle to save and share natural resources.

(d)

What is wireless satellite.

1. Definition:

It enables communication between devices like mobile, computer, satellites using radio frequency, infrared or bluetooth technology.

2. Technology:

WiFi, bluetooth, cellular networks, (2G, 3G, 4G, 5G), satellite communication.

3. Application:

Used in portable telephone, internet communications, broadcasting, GPS navigation and remote control sensing.

4. Advantage of wireless over wired devices:

It is portable, flexible, ease of installation due to wireless connection.

5. Challenges for wireless connection:

1. It has data security issues.
2. Firewall can be an obstacle.
3. Signal weakness due to environmental condition.

Working of Satellite:

1. Satellite work by orbiting the Earth using gravity to stay in its trajectory.
2. It transmits signals in the form of data, images, radio waves and UV rays.
3. Satellites rely on solar panels and batteries for power.
4. Functions that satellite performs are GPS navigation, communication, scientific research, search and rescue, astronomy, remote sensing and observing weather and other planets.

Q. no. 4

(a)

What is hepatitis _____ prevention.

Definition:

"Hepatitis is an abnormality caused due to malfunction of liver, mainly production and filtration of blood."

P. T. O

Types of hepatitis:

1. Hepatitis A:

It is caused by hepatitis A virus that is transmitted to human body via flies, feces, contaminated food, unsafe water. It's the basic type.

● Symptoms:

- Dark color urine

- light color stool

● Prevention:

- Extreme fever by paracetamol

- Loss of appetite by soft diet

2. Hepatitis B:

It is caused due to blood transfusion from a contaminated person and exchange of body fluids:

● Symptoms:

- Jaundiced skin

- Typhoid

- weakness and body pain

● Prevention:

- Safe sex

- Handwashing

- vaccines

3. Hepatitis C:

It is caused when a person gets in touch with the blood of a carrier of hepatitis C virus and contaminated syringes.

● Symptoms

- weight loss

- Spontaneous bleeding

● Prevention:

- safe blood transfusion

- Blood screening

- safe sex

- Hygiene machine

4. Hepatitis D:

It occurs in people already infected with hepatitis B.

● Symptoms

- Fatigue

- Diarrhea

- Pain

- Pale skin

● Prevention and cure

- Vaccine of hepatitis B

- Rest

- Fluid intake.

Hepatitis E

It is caused by consuming contaminated food and water, food that is not properly cooked or is stale or contaminated with poisonous substances causes liver malfunction.

● Symptoms

- Abdominal pain
- Vomiting
- Fever
- Diarrhea

● Prevention and cure

- Good food
- Clean water
- Active and Passive, vaccination

(b)

Methods of food preservation

Definition:

It is a process or technique used in order to maintain internal and external factors which may

Cause food spoilage

Methods of food preservation:

1- Cold method

By cooling the food at less than 10°C to avoid growth of micro-organisms and reducing growth of bacteria and other food contaminants.

2. Chemical reaction:

By saving food using sorbic acid, sodium benzoate and Sulphur dioxide (SO_2) this method is less common.

3. Sun drying

This method is done by placing meat, vegetables and fruits in sun and air so that all the moisture is evaporated that could be conducive for microbial growth.

4. Heat

The method is performed by applying heat to the food and denaturing its enzymes. At 121°C or more. Heating can be wet & dry

or via pasteurization.

5. Acid:

The acidic reaction with food reduces growth of bacteria protein that produces smell and bad taste of food after few days. This protein is broken down by acidic reaction.

6. Sugar or salt preservation:

In ancient times sugar and salt brine was made to save food specially meat and vegetables for a long time specially till next season. Now-a-days salt preservation technique is used to make pickle as well.

7. Smoke

This technique is used by grilling the vegetables and meat with the help of smoke and heat produced by burning of wood.

8. Radioactive rays:

Microwave, UV, X-Rays and other rays of different wavelengths are applied to save food from spoiling.

Date: _____

(C) Fertilizers and types.

Definition:

"These are substances applied to soil to supply essential nutrients, beneficial for plant growth and increase agricultural productivity of soil."

Types:

1. Nitrogen based

These fertilizers are good for leaf health and boost process of photosynthesis.

- Urea

- Ammonium nitrate

2. Phosphorus based

These fertilizers provide vitals for roots nurturing that absorb water and minerals from soil.

- Triple super phosphate

3. Potassium based

It develops immunity in plants to fight multiple

infections and help in water conservation and regulation, KCl.

4) Compound fertilizers:

These are mixture of above mentioned fertilizers for enhanced productivity.

- Nitro phosphate

5) Organic fertilizers:

These are collected from natural resources and contain living organisms that increase the soil fertility.

- Blue green algae.

- Azobacter

(d)

Anatomy of Tooth

Introduction:

Human beings have 32 teeth present in the oral cavity of the digestive system of human body.

Teeth are used for chewing, biting, grabbing, smile and to maintain the structure of jaws as an

essential part of face.

Parts of a tooth

1) Enamel:

It is the hard protective outer layer of tooth that covers the crown.

2) Dentin:

It is a soft layer inside enamel required to hold the tooth structure and giving it a proper shape.

3) Cementum:

It covers the root surface and anchors the tooth to the jawbone.

4) Crown:

It is the white visible part of the tooth that needs to be cleaned twice a day for healthy maintenance.

5) Root:

It holds the tooth to the jaw and provides blood flow to the living part of the tooth.

P.T.O

6) Gum:

Gum surrounds the tooth, bone it is the pinkish visible part beneath the crown.

7) Jawbone:

Jawbone is required to provide stability to the face, mobility of mouth and chewing of food.

Diagram:

