Dos and Don'ts for Generaral Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper according to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly. So, address all of them in a just manner.

2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.

3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.

4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.

5. Focus on your spellings and your grammar. Here, in GSA there's no deduction in marks but your expression will definitely create an impact.

6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

Good luck for CSS 2025. You're gonna rock in sha Allah. :)

Section II

Question 6

a) Ratio of Block A to Block B ...

B   Number blocks =

Solution:

Let ... and ...

Statement:

A = 50 times more than B

$4x = 50 + 3x$

Since A + B ... $7(50) = 350$

So,

$$4x + 7x + 3x + 4x = 50$$

$$7x - 3x = 50 \Rightarrow x = 50$$

$$\boxed{350}$$

b) Pair of Shoes = 80 $

Discount = 15%

Sales Tax = 10%

Solution:

Finding Discount ... = 12

Discounted Price = Original − Discounted Price

$= 80 - 12 \Rightarrow 68$

Sales Tax Price = 10% $\times 68 \Rightarrow 0.10 \times 68 = 6.8$

Final Price = Discounted + Sales tax

$= 68 + 6.8 \Rightarrow \boxed{74.8}$

CamScanner

‹› Distance train travelled = 42 km
Average speed = 36 km/h
Time taken = ?

Solution

∴ $t = \dfrac{distance}{speed} = \dfrac{42^{7} km}{\underset{6}{36} km/h} \longrightarrow \dfrac{7}{6}$ hours

$t = 1$ hour and 10 mins.

Adding t into departure time (4:00 PM).

Arrival Time $\boxed{= 5:10 \text{ PM}}$

4) Unscrambled words :

i) Superintendent   ii) White

Question 7

a) Cylinder radius $r = 30$ cm
Height $h = 1$ m $\Longrightarrow$ 100 cm
Volume $v = ?$

Solution

∴ $V = \pi r^{2} h$

Putting values in the formula,

$V = \pi (30 \text{ cm})^{2} (100 \text{ cm})$

$\boxed{= 90000 \, \pi \text{ cm}^{3}}$

b) Average age of 3 boys = 15 years

Ages ratio = 3 : 5 : 7

Age of the youngest = ?

Solution:

Let x be the ages, $3x$, $5x$, $7x$
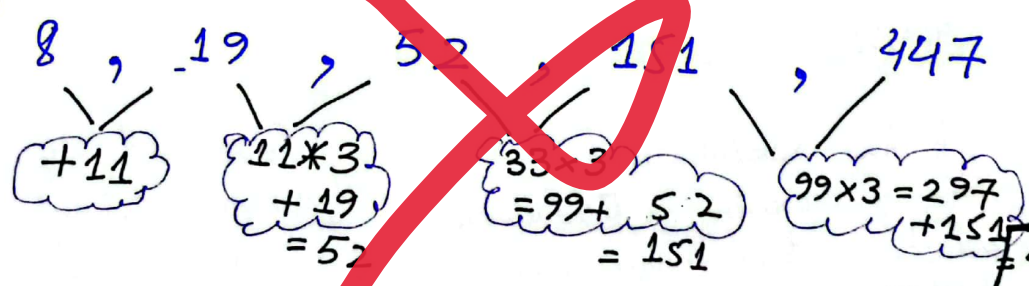
∴ Average age = $\dfrac{\text{Mean}}{\text{No. of boys}}$

$$\dfrac{15x}{3} = 15 \implies 5x = 15$$
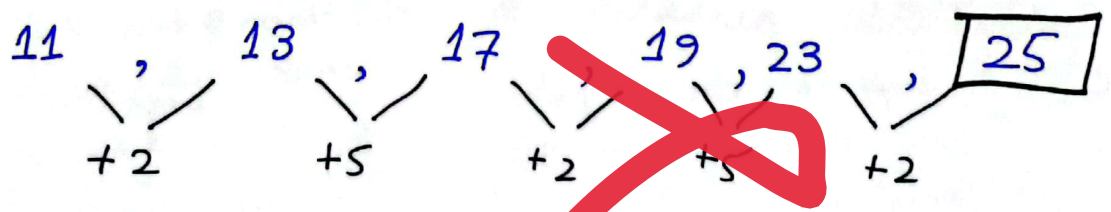
$x = 3$ so the age of the youngest boy :-

$3x \boxed{\implies 9}$

c) Identified series :-

i) wrong number will be 447 because the pattern being followed is :-

8 , 19 , 52 , 151 , 447

+11

11×3
+ 19
= 52

33×3
= 99 + 52
= 151

$99 \times 3 = 297$
+ 151
= 448 and not 447

So, 447 is wrong.

ii) The correct answer is 25 because ;

11 , 13 , 17 , 19 , 23 , 25

+2   +5   +2   +3   +2

Section I
Question 2

q) Artificial Intelligence the new electricity

Following is the tabulation of similarities showing how artificial Intelligence (AI) is the new electricity :-

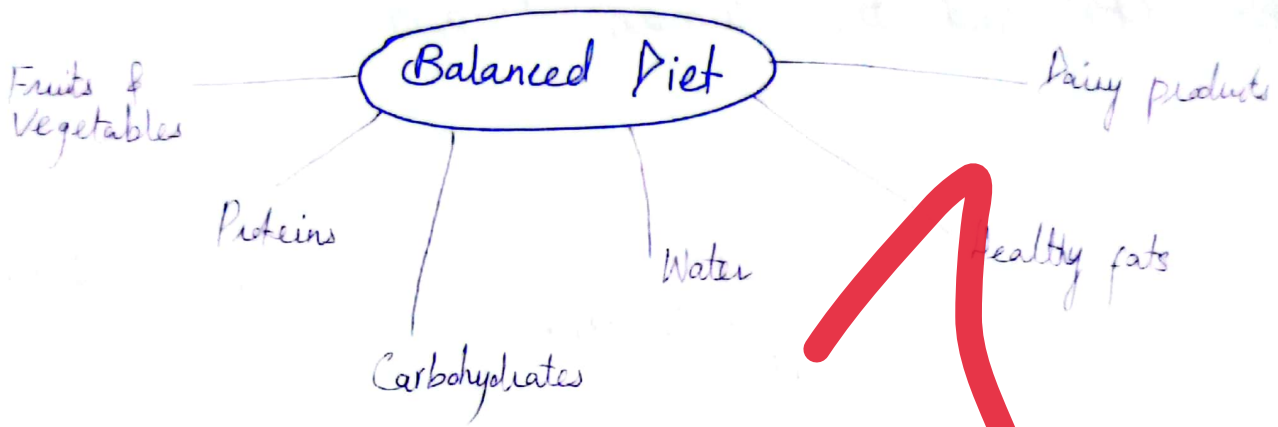| Domain	AI	Electricity
Industry	It also automated industry as AI-driven robots not only maintain the supply chain but also enhances the inspection processes.	Enabled factory automation from power machinery to the assembly lines.
Household	Now AI-powered assistants control household devices and optimize energy usage through the smart appliances.	From lighting to assisting daily life chores through electric appliances, it assisted daily life.
Education	It has revolutionized the pre-existing technologies and took them one step ahead with AI-driven tools such as language translation tools and online learning platforms	Expanded access to the education technology such as computer and digitised the learning environment.
Governance	It helps in smooth public service delivery, from online complaint portals to predictive policing, it is ubiquitous.	From supporting public utilities to supplying power to the government offices it became inevitable part of governance.

b) CPU and the Human Brain

CPU resembles the Human brains functioning in the following aspects:

Aspect	CPU (Central Processing Unit)	Human Brain
Function	Processes data and instructions of computer	Processes information and controls body functions
Processing Speed	Nanoseconds	Milliseconds to seconds
Parallel Processing	Multiple tasks performer simultaneously	Inputs and Outputs concurrently
Memory	Stores and accesses data in RAM	Stores and retrieves data in neural connections
Learning	Programmed and learned from data	Learns, adapts, forms new neural connections
Energy efficiency	Low power consumption for operation	Energy consumption based upon the activity.

9) Balanced diet & Vitamin deficiency disorders

A balanced diet, as the name suggests, is an intake that refers to eating food which maintains health and prevents nutritional deficiencies and excesses.
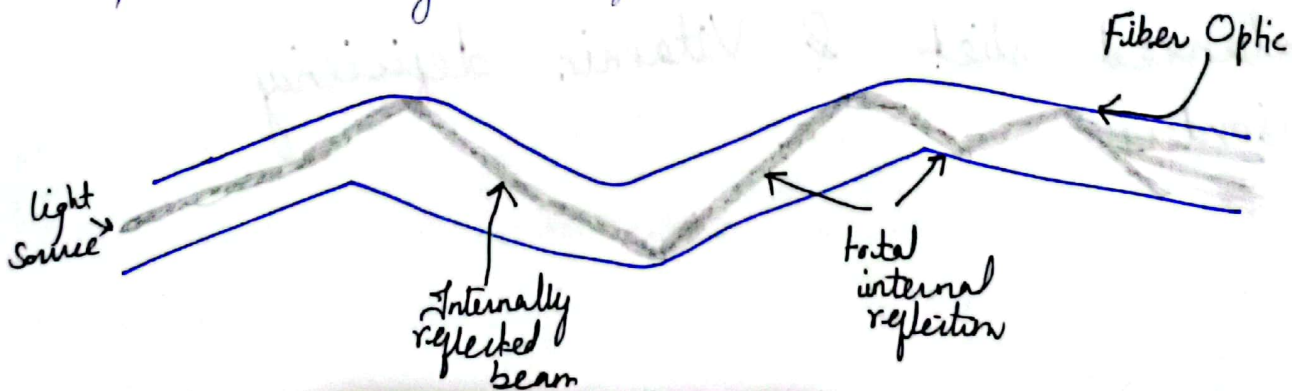
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                    ┌─────────────────┐
     Fruits &       │  Balanced Diet  │        Dairy products
     Vegetables ────┤                 ├──────
                    └─────────────────┘
                                              Healthy fats
        Proteins
                              Water

            Carbohydrates
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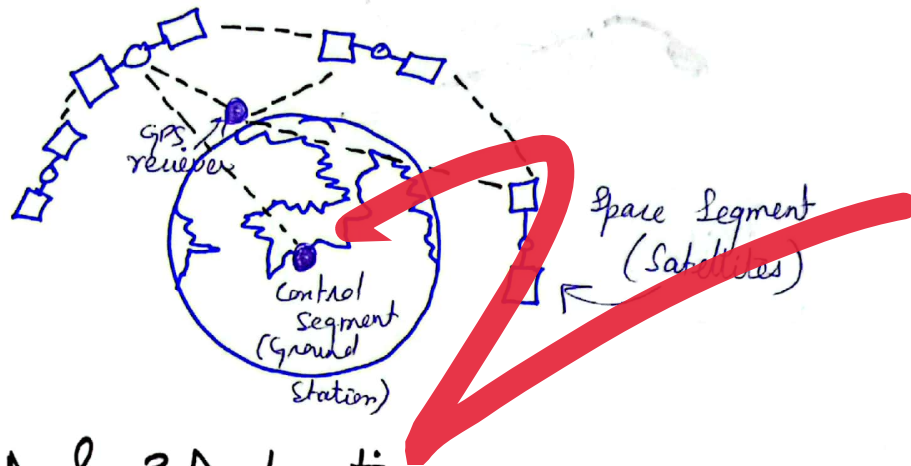| Vitamin	Deficiency Effects
A	- Night blindness / Vision Problems - Weak Immun System
B	- Anaemia - Neurological disorders - Skin & digestive problems
C	- Oral Problems - Weak Immunes system (impaired wound healing, Scurvy)

d) Working of Optical Fibres :

Photons travel across the Optical fiber through the perpetual bouncing ~~acro~~ of the cable walls as shown in:

Fiber Optic

light source

Internally reflected beam

total internal reflection

Global Positioning System (GPS)

It is a technology which provides location and time information anywhere on earth where there is an unobstructed path of light. Its working is demonstrated below:-
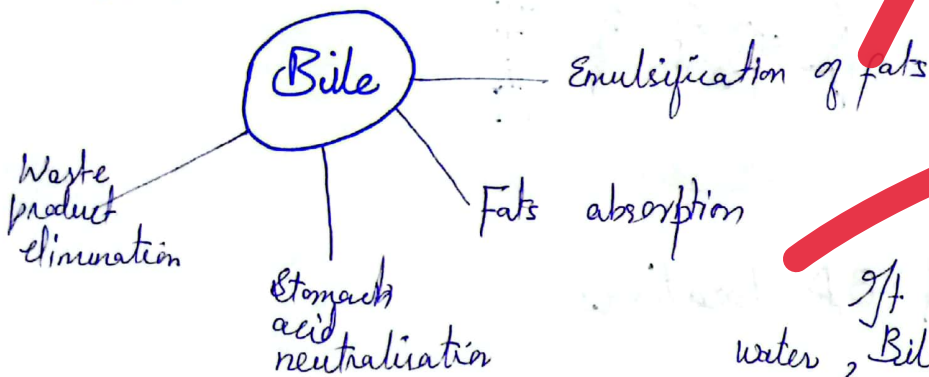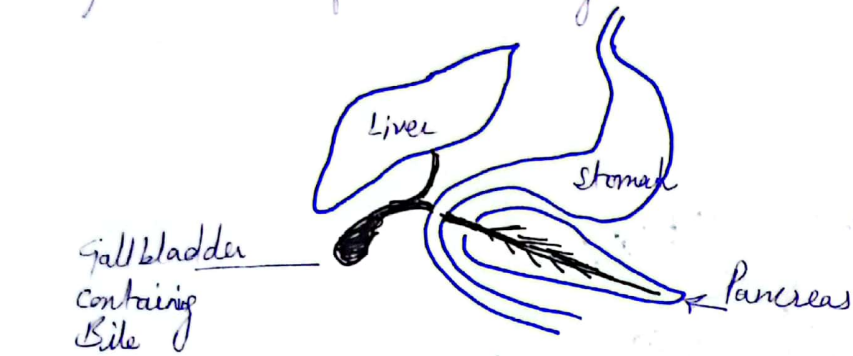

Measuring 2D & 3D Locations

Through the process of trilateration, a 2-dimensional position comprising of Latitude and Longitude are determined by GPS. GPS receiver needs the coverge of the object by atleast three satellites, it then measures the distance between the body/object and the satellite and their point of intersection determines the 2D location of something on earth. Whereas, for the 3-demensional location determination where altitude adds into the preexisting dimensions, GPS needs coverge by atleast four satellites. The process of trilateration besides altitude above sea level gives the 3rd dimension of an object's location.
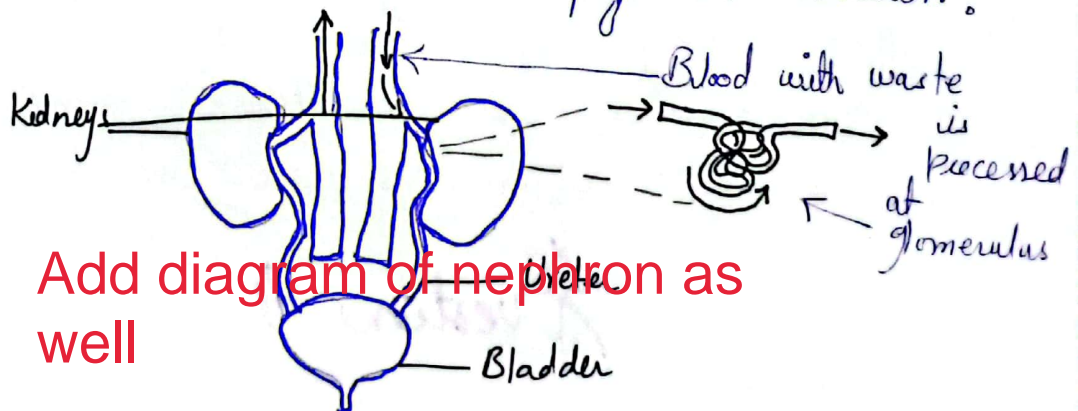
Question 4

a) Bile

Bile is a digestive fluid produced by liver and stored in gallbladder before releasing into the small intestine.

Gallbladder containing Bile

Liver

Stomach

Pancreas

Bile
- Emulsification of fats
- Fats absorption
- Waste product elimination
- Stomach acid neutralisation

It is composed of water, Bile salts, bilirubin, cholesterol and electrolytes that help in digestion.

b) Kidney's role in excretion

Kidneys plays a key role in maintaining homeostasis of the body through regulating electrolyte balance, blood pressure and removing waste products from the blood stream. Here are the roles it plays in excretion:

Kidneys

Blood with waste is Processed at glomerulus

Add diagram of nephron as well

Ureter

Bladder

Kidney's role in excretion

- Hormone Production - like erythroprotein and renin
- Filteration to remove waste products from blood
- Detoxification of drugs and related substances
- Reabsorption of nutrients and added to the bloodstream
- Homeostasis through acid-base, ion Regulation
- Secretion of ions to be secreted as an additional waste product

c) Methods of Solid Waste Management

It can be managed through various methods such as:-

i) Source reduction and _____ as less packaging, reusable Products, efficient manufacturing process.

ii) Recycling & reuse — Repurposing materials conserves natural resources, reduces energy consumption and decreases landfill waste

iii) Composting — Biological decomposition of organic waste that add nutrients back to the soil such as food scraps and trimmings.

iv) Landfilling — Nonreusable waste is buried in landfills

v) Incineration and Waste to energy — Takes place through combustion and gastification technics.

vi) Bioremediation — Microorganism breakdown waste through aerobic and anaerobic digestion

vii) Pyrolysis & Gastification — Thermal gases converting waste into valuable gases such as biochar, liquid fuels.

d) Define terms:

i) Anaemia
- Insufficient red blood cells
- Symptoms: fatigue, weakness, shortness of breath
- Causes: Iron deficiency, vit B12 deficiency, genetic disorder
- Treated with supplements & causes
- Diagnosed through Blood test

ii) Appendicitis
- Appendix Inflammation
- Symptoms include the abdominal pain, vomit, fever
- Caused by blockage of appendix lumen or infection
- Diagnosed through Imaging, blood test
- Treatment includes appendectomy or antibiotics

iii) Spleen
- filters blood, removes damaged cells and stores platelets
- Reservoir of immune cells
- Located in upper left abdomen
- Diseases include Spleenomegaly and Splenic rupture

iv) Myopia
- Vision problem of where distant objects appear blurry
- Corrective surgery and glasses
- Diagnosed by in eye examin
- Caused when eyeball too long or cornea too curved

v) Isotones
- Same number of neutrons but different number of protons in atomic nuclei
- Used in classification scheme
- For example, Carbon-12, Nitrogen-13, Oxygen-14

This is an academic way of presenting information