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 acccording 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. :)

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Q.No. 1:
(a) Define Malnutrition

Malnutrition refers to the deficiency, excess or imbalance in a person's intake of certain nutrients. It can be said to be under nutrition and malnutrition. refers to the deficiency with which gives as stunting, wasting and underweight. On the other hand overnutrition refers to the excess intake of nutrients leading to overweight, obesity etc. Malnutrition is not limited to developing countries but is a global issue that affects people across all ages.

Major causes of Malnutrition

1: Inadequate intake of dietary. One of the primary causes of malnutrition ...

insecurity and economic inequality. In many parts of the world, people cannot afford a balanced diet rich in essential nutrients such as of vitamins, minerals and proteins.

2- Disease and infection:

Illness and infections trigger the malnutrition by reducing appetite, impairing nutrient absorption, or increasing on body's nutrient needs. For example, disrheal disease can lead to the loss of essential nutrients from the body, while chronic infections like HIV/AIDS and TB can increase body demands for nutrients.

3- Poor Maternal nutrients:

Poor Maternal Malnutrition during pregnancy can have serious consequences for both the mother and the child. Poor maternal nutrition can lead to low birth weight, which increases the risk of infant mortality and stunted growth.

4- Environmental factors:

Natural disasters, conflicts and climate change can disrupt food production and access, leading to malnutrition. For examples droughts can

reduce crop yields, while conflicts can displace populations and disrupt food supply chains.

Consequences of Malnutrition

1) Health impact:

Malnutrition weakens the immune system, making individuals more suspectible to infections and diseases. Children with malnutrition are more likely to suffer from frequent illnesses and have a higher at risk of mortality. In addition, malnutrition can lead to a long-term health problems such as anemia, osteoporosis and chronic diseases like diabetes and heart disease.

2) Congnitive impairment:

Malnutrition during critical periods of development, such as infancy and early child childhood can impair brain development and congnitive function. This can result in poor academic performance, and reduced congnitive abilities and lower pa prati productivity in adulthood.

3) Economic burden:

Malnutrition imposes a significat economic burden on societies. It leads to reduced productivity, increased healthcare costs and perpetuates the cycle of poverty. Malnourished individuals are less likely to be able to work, and they are more likely to be able to work, and they are more likely to require medical care, placing a strain on healthcare systems.

4) Increased Mortality Rates:

Malnutrition, particularly in children and pregnant women, increases the risk of death. According to the World Health Organization (WHO), malnutrition is a major contributor to child mortality, with millions of children dying each year from causes related to undernutrition.

(b) Difference between Food contamination and Adulteration.

Food contamination refers to the presence of unintended harmful that substances that can cause illness or pose a risk to health. These contaminents can be biological, chemical, or physical.

Biological contaminants include bacteria, viruses, parasites and fungi which can lead to foodborne diseases.

Chemical Contaminants, include pesticides, heavy metals, and toxins that can accumulate in food due to environmental pollution or improper use of chemicals.

Physical contaminants, include foreigns objects. such as glass, metal, or plastic that may accidentally enter food during processing or packaging.

contamination can occure at any stage of the food supply chain, from production to consumption. For example, improper handling of raw meat can lead to growth of bacteric harmful bacteria. Contaminated water used for washing fruits and vegetables can introd introduce harmful microorganisms into the food. Food contamination is often

accidental can result from poor hygeine, inadequate storage, or improper cooking methods.

Food Adulteration:

Food adulteration, on the other hand, is the deliberate addition of inferior or harmful substances to food in order to increase quantity, reduce costs or deceive consumers. Adulteration is a form of food fraud that & can compromise the safety, quality and authenticity of food products. common examples of food adulteration is adding water to milk, mixing cheaper oils with more expensive ones, or adding arti artificial colours and flavors to disguise poor quality ingredients.

Key Differences:

1) **Intent:**
The primary difference between contamination and adulteration lies in intent. Food contamination is accidental but while food adulteration is intentional

2) **Impact on health:**
Both have the harmful effects on the human health but adulteration often involves the

delibrate addition of harmful *et* substances making it potentialy more dangerous.

(c) What are computer buses.

Computer buses are the communication systems which transfere data between different components of a computer or between computers. Buses that A bus consists of a series of parallel lines or wires that carry data, addresses and control signals.

There are three main types of computer buses.

1 **Data bus:** The bus that carries actual data being processed by CPU.

2 **Address bus:** It carries memory addresses that CPU uses to locate data in memory.

3 **Control Bus:** It carries control signals that manage various operations within computers.

Difference between RAM and ROM:

① **Type of Memory.**
RAM is a type of volatile memory, meaning that it loses all stored data when the power is turned off.

On the other hand, ROM is ~~not~~ a type of nonvolatile memory, meaning that it retains data ~~even~~ if ~~the~~ ~~power~~ power is turned off.

2) Function:
RAM is used for the temporary storage of data while ROM is used for permanent storage of data

3) Speed:
RAM is faster than most other types of memories while ROM is slower than ~~RAMROM~~ because it is not designed for rapid data access but for reliability and stability.

4) Usage:
RAM is used for running applications, operating systems and the temporary data storage. While ROM is used to store firmware, bootloaders and essential system instructions that are required for the computer to start and function properly.

(d) Geostationary satellites

Geostationary satellites are a specific type of sta satellite that orbits the Earth at the same rotational speed as the Earth itself. This means that these satellites appear to be stationary relative to a fixed point on the Earth's surface. They They are positioned in a circular orbits directly above the equator, at an altitude of approximately 35,786 km. This particular orbit is known as geostationary orbits.

Geostationary satellites are commonly used for satellite television, radio broadcasting, internet services. They provide consistent coverage, enabling uninterrupted communication with ground stations.

Difference between Natural and Artificial satellites.

Natural Satellites:

Natural Satellites are the celestial bodies that orbit a planet or another celestial body naturally without human intervension. The most well known example of a natural satellite is the moon, which orbits around Earth.

Natural satellites are formed by Natural processes.

Natural satellites vary in size, shape, and composition. They can be rocky, or icy and they may have irregular orbits. For example the moons of Jupiter.

Artificial satellites

Artificial satellites are man made objects intentionally placed into the orbits around a planet or another celestial body. They are launched from Earth and serve various purposes such as communication, scientific research and navigation.

Artificial satellites are designed for specific tasks such as providing global positioning system (GPS) services, observing earth's climate. Examples include communication satellites, water satellites and space telescopes.

QNo5 (a) What is Radioactivity

Radioactivity is a process by which unstable atomic nuclei spontaneously decay, emitting radiation in the form of particles or electromagnetic waves. This decay occurs because certain atomic nuclei are not stable and in order to achieve stability, they release energy. The emitted radiations can be in the form of alpha particles (α), beta particles (β) or gamma rays (γ). It is a natural phenomenon, but can also be induced artificially.

Difference between Natural and artificial Radioactivity.

	Natural Radioactivity	Artificial Radioactivity
Definition	It is the spontaneous emission of the radiation by naturally occuring isotopes.	It is the radiation induced by human invention through nuclear reactions.
Examples	Uranium -238, Radium - 226	Carbon -14, Iodine -131
Occurence	It is found naturally in the environment (e.g rocks, soil, water)	It is produced in the laboratories, nuclear reactors, and particle accelerators

CamScanner

Origin	Formed during the Earth's formation or through cosmic interactions	Created by bombarding stable elements with neutrons or other particles
Process	It occurs spontaneously without the external influence.	Induced through human intervention, such as nuclear reactions.
Purpose	Naturally occuring, no specific purpose	Used for medical diagnostics, treatment, industrial applications, and research
Control	Uncontrollable, random decay	Controllable and can be tailored for specific uses.
Impact on Environment	Contributes to background radiation level	can be controlled but requires careful management to avoid contamination.
Safety concerns	Generally low risks, as it is a part of natural background radiation	Requires strict safety measures to prevent exposure and contamination

(b) What is Polio?

Polio or poliomyelitis, is a highly infectious disease caused by the poliovirus. It primarily affects young children and can lead to paralysis, muscle weakness and in severe cases, death. The virus primarily spreads through the fecal oral route and can affect the nervous system, particularly the spinal cord, leading to muscle atrophy and permanent disability.

Symptoms of Polio:

The symptoms of Polio can be categorized into three stages:

① Non Paralytic:

Fever, fatigue, headache, Sore throat, Vomiting, stiffness in the neck and back, Muscle pain and tenderness are the initial systems of polio.

② Paralytic Polio:

Loss of reflexes, severe muscle pain or weakness, flaccids, breathing difficulties, longterm disability in severe cases.

3) **Post - polio**

This can occur years after recovery and includes symptoms like muscle weakness, fatigue, and joint pain.

Causes of Spreading.

1) **Poor sabitation:**

In areas with inadequate sanitation, the virus can spread through contaminated water sources or food.

2) **Close contact**

The virus can spread through direct contact with an infected person, or especially in crowded environments.

3) **Oral transmission:**

In rare cases, polio can spread through oral contact with respiratory droplets or st saliva saliva from an infected person.

4) **Lack of immunization**

Communities with low vaccination rates ata are at a higher risk of polio.

Prevention :

Preventing polio involves both improving hygiene and ensuring widespread vaccination. Key preventive measures include:

1) Improved Sanitation :

Ensuring access to clean water, proper sewage systems, and good hygiene practices (e:g handwashing) helps reduce the risk of infection.

2) Avoiding contact:

Areas where polio is still prevalent, minimizing contact with infected individuals can help reduced the risk of transmission.

3) Vaccination Compaigns:

Ensuring that children and adults in at-risk areas are vaccinated is crucial to preventing the spread of virus.

Polio Vaccines:

There are two types of vaccines Inactivated Polio Vaccine and (IPV) and Oral Polio Vaccine (OPV). IPV is given as an injection in leg or arm depending on age. OPV is taken by mouth.

(c) **Steps in Solid Waste Management**

1- Waste Generation:
Waste is created from various sources like homes, businesses and industries. Reducing waste at the source helps lessen the burden on waste management systems.

2- Waste Collection:
Waste is gathered from where it is generated. Efficient collection systems ensure that waste is picked up regularly and safely.

3- Waste Transportation
The collected waste is transported to processing or disposal sites. Proper transportation minimizes environmental impact and prevents health hazards.

4- Waste Sorting:
Waste is separated into categories like recyclables, compostables, and non-recyclables. This helps in recycling useful materials and managing different types of waste appropriately.

5- Waste Treatment:
Waste is processed to reduce its volume or make it less harmful. e.g composting organic waste.

6- Waste Disposal.

Residual waste that cannot be recycled or composed is disposed of in landfills or through incineration. Proper disposal methods are crucial to prevent pollution.

Monitoring and control:

Regular Monitoring ensures that waste management practices are effective and compliant with regulations. It helps in identifying and addressing issues promptly.

Main issues:

1) Inadequate infrastructure:
Many areas lack the necessary facilities for effective waste management, leading to inefficiencies and environmental problems.

2) limited recycling and composting
Insufficient recycling and composting facilities result in valuable materials being wasted and organic waste contributing to landfills.

3) Rapid Urbanization:
Growing population increase waste generation faster than the capacity

of waste management systems, causing strain on existing ~~information~~ land.

4) **Lack of Public Awareness:**
Many people are not well informed about proper waste management practices, leading to low recycling rates and improper disposal.

5) **Illegal Dumping:**
Waste is often dumped in unauthorized places, causing environmental damage and ~~he~~ health risks.

6) **Financial constraints:**
Limited funds affect the ability to improve waste management infrastructure and services.

7) **Health and Environmental Risks:**
Poor management can lead to pollution and health issues such as water contamination and air pollution ~~fo~~ from burning waste.

(d) **Population planning:**

Population planning refers to the strategies and policies implemented by Governments or organizations to mange and influence population growth and distribution. It aims to achieve a balance between population size and resources, ensuring sustainable development and improving quality of life. Population planning encompasses various aspects such as family planning, education, health services and economic policies to control birth rates, manage migration, and address demographic challenges.

Benefits.

1) **Sustainable Resource Management**

By managing population growth resources such as food, water, and energy can be used more efficiently efficiently. It reduces the risk of resource depletion and environmental degradation, supporting long term sustainability.

2) **Improved quality of life.**

Enhances access to the education healthcare, and other essential services, leading to better overall well being.

3) Economic stability and Growth:

It facilitates job creation, reduces poverty and supports economic stability by aligning workforce supply with demand.

4) Enhanced Health outcomes:

Reduces maternal and infant mortality rates, prevents unwanted pregnancies and improves overall health.

5) Better education Opportunities.

Increases education ~~treatment~~ attainment, improves literacy rates, and fosters a more skilled work-force.

Section II.

Q.NO6:

(a) Given.

Initial enrollment = 850 pupils

New enrollment = 1125 pupils

$$\text{Percentage increase} = \frac{112 \, New - Initial}{Initial} \times 100$$

$$= \frac{(1120 - 850)}{850} \times 100$$

$$= \frac{(270)}{850} \times 100$$

Percentage increase = 0.318×100

31.8%

So, the ensollment increased by ~~81% 87~~ 31.8% from January 2022 to January 2023.

(b)

Man's age = x.

Son's age = ~~y~~ $.5x$.

$x = 5y \longrightarrow \text{①}$

~~After~~

$x^2 + y^2 = 114$.

$(5y)^2 + y^2 = 114$.

$25y^2 + y^2 = 114$.

$26y^2 = 114$

$y^2 = \dfrac{114}{26}$

2 years ago, there age was. $(x-2)$ and $(5x-2)$ respectively.

$(x-2)^2 + (5x-2)^2 = 114$.

$x^2 - 4x + 4 + 25x^2 - 20x + 4 = 114$.

$26x^2 - 24x + 8 - 114 = 0$.

$26x^2 - 24x - 106 = 0$.

$13x^2 - 12x - 53 = 0$

(c) let ~~heads is denoted by~~ h

let hens = h

cows = c

Then the no. of heads are

$$h + c = 48 \rightarrow ①$$

No. of ~~legs are~~ feet are

$$2h + 4c = 140 \rightarrow ②$$

Multiply eq ① by 2 and subtract it from ②.

$$2h + 4c = 140$$
$$+ 2h + 2c = +96$$
_____
$$2c = \cancel{84} \, 44$$

$$\boxed{c = 22}$$

Put c = 22 in eq ①

$$h + 22 = 48$$

$$h = 48 - 22$$

$$\boxed{h = 26}$$

There are 26 hens and 22 cows.

(d) let assume that the car travelled total distance $D = 120$ km.

Then for 1st half of journey ϕ distance $D_1 = \cancel{\dfrac{120}{40}}$ es $\dfrac{D}{2} = \dfrac{120}{2} = 60$ km.

For 2nd half
$$D_2 = \dfrac{D}{2} = 60 \text{ km.}$$

The time taken for 1st half

$$T_1 = \dfrac{D_1}{\text{Vps}_1} = \dfrac{60 \text{ km}}{40 \text{ km/h}} = 1.5 \text{ hours.}$$

Time Taken for second half.

$$T_2 = \dfrac{D_2}{S_2} = \dfrac{60 \text{ km}}{60 \text{ km/h}} = 1 \text{ hour.}$$

$T =$ Total time $= T_1 + T_2 = 1.5 + 1$
$$= 2.5 \text{ hours.}$$

$$V_{avg} = \dfrac{\text{Total Distance}}{\text{total time.}}$$
$$= \dfrac{120}{2.5}$$
$$= 48 \text{ km/h}$$

The average speed of the car is 48 km/h.

Qno 7:

(a)   let the number be x.

$$\frac{x}{6} + 50 = 60$$

$$\frac{x + 300}{6} = 60$$

$$x + 300 = 60 \times 6$$
$$x + 300 = 360$$
$$x = 360 - 300$$
$$x = 60$$

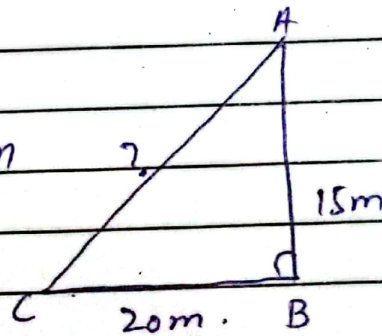The number is 60.

(b)

By pythagoras theorem

$$(AC)^2 = (AB)^2 + (BC)^2$$

$$(\overline{AC})^2 = (15)^2 + (20)^2$$
$$(\overline{AC})^2 = 225 + 400$$
$$(\overline{AC})^2 = 625$$
$$\boxed{AC = 25m}$$

Hence the distance my aried distance
from the top of the tower
25m.

(d) Tariff paid for odd dates = Rs 1000.
Tariff paid for even dates = Rs 2000.

First day starts from 5th of month.

let m = even days.
k = odd days.

So $1000k + 2000m = 30000$ → ①

Let n be the total number of days, the man stayed.

If the number of days is even, then there would be one even date for each odd date, then $m = k$.
equation ① becomes –

~~1000m~~

$1000k + 2000k = 30000$
$3000k = 30000$
$\boxed{k = 10}$

So total number of days
$\boxed{n = m+k = 20}$

If n no of days he stayed are odd

$m = k+1$

Equation ① becomes.
$1000k + 2000(k+1) = 30000$
$1000k + 2000k + 2000 = 30000$
$3000k = 30000 - 2000$
$3000k = 28000$
$k = \dfrac{28000}{3000}$

$k = 9.67$
(not a whole number, so this case is invalid)

Hence man stayed for 20 days in the hotel.

(b) Find the odd number out.

Difference between 16 and 8 = 8.
Difference between 24 and 16 = 8.
Difference between 34 and 24 = 10
Difference between 40 and $^+$34 = 6
Difference between 48 and 40 = 8

The difference are mostly 8, except for the difference between 24 and 34 is 10 and 34 and 40 is 6. This irregularity indicates that 34 does not fit the general pattern of differences.

Explain in words