

DATE: 09/10/2024

MOCK8

General Science & Ability

SECTION II:

Q6

a)

$F = 3x$ $S = x$	$F = ?$ $S = 30$
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$x + 5 = 30 \Rightarrow x = 25$  (5 years ago)  
 $F = 3(25) = 75$  now  $75 + 5 = 80$

Father's current age is 80 years old

b)

$$10 + 30 + Y + 50 = 50$$

\$4

$$Y + 90 = 50(4)$$

$$Y = 200 - 90$$

$$Y = 110$$

c)

i) 2, 6, 18, 54, ...

$$\Rightarrow 2, 6, 18, 54, 162$$

$$\begin{array}{r} 54 \\ \underline{4 \times 3} \\ 162 \end{array}$$

ii)

3125, 256, 27, 4, 1

(27)

$$\Rightarrow 3125, 256, 27, 4, 1$$

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d)  $x \cdot y = 320$       Ratio of  $\frac{x}{y} = \frac{1}{5}$        $x^2 - y^2 = ?$

$$\left[\frac{y}{5}\right] \cdot y = 320 \quad \Rightarrow \quad y^2 = 320 \times 5$$

$$y^2 = 1600 \quad y = \sqrt{1600} = 40$$

$$x = \frac{40}{5} = 8$$

$$y^2 - x^2 = 40^2 - 8^2 \Rightarrow \boxed{1536}$$

Q7

a) 2 scooties for 96000 each

First scootie profit = 20%.

$$x (1.20) = 96000 \quad 32^{\circ}$$

$$x = \frac{96000}{1.20} \Rightarrow x = \frac{96,000}{1.20} \times 100$$

Byying price of 1<sup>st</sup> scootie = 80,000

Second scootie loss = 20%.

$$x (0.80) = 96,000 \Rightarrow x = \frac{96,000}{0.80} \times 100$$

$$x = 120,000$$

$$\text{Total buying cost} = 120,000 + 80,000 = 200,000$$

$$\text{Total sell price} = 96,000 + 96,000 = 192,000$$

$$\text{Total loss} = 200,000 - 192,000 \\ = \boxed{8000}$$

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$$\begin{array}{l} b) \quad 195 \text{ men} : 10 \text{ hr/day} : 20 \text{ days} \\ \quad \quad x \text{ men} \quad 13 \text{ hr/day} : 15 \text{ days} \end{array}$$

$$195 \text{ men} \quad 20 \text{ days} \times 10 \text{ hr} = 200 \text{ work hours} \\ \text{day}$$

$$x \text{ men} \quad 15 \text{ days} \times 13 \text{ hr} = 189 \text{ work hours} \\ \text{days}$$

$$x \text{ men} = 195 \text{ men} \times \frac{200 \text{ work hours}}{189 \text{ work hours}}$$

$$x = 206.3 = \boxed{207 \text{ men}}$$

$$\begin{array}{l} c) \quad A = \{a, e, i, o, u\} \\ \quad \quad U = \{a, b, c, \dots, z\} \end{array}$$

$$A' = \{b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, \\ t, v, w, x, y, z\}$$

$$d) \quad \text{Area Volume of pyramid} = \frac{\text{base area} \times h}{3}$$

$$\frac{x^2 \text{ m}^2 \times 3 \times 10^3 \text{ m}}{3} = 372 \times 10^{-6} \text{ m}^3$$

$$x^2 \text{ m}^2 = \frac{372 \times 10^{-6} \text{ m}^3}{10^3 \text{ m}}$$

$$x^2 \text{ m}^2 = 372 \times 10^{-9} \text{ m}^2$$

$$x^2 = 372 \times 10^{-9} \text{ m}^2$$

$$x = 19.287 \text{ m}$$

$$\text{Total perimeter} = 4 \times 19.287$$

$$\boxed{77.148} \text{ m}$$

## Section I

Q2

- a) COP-28, held in Dubai from Nov 30 to Dec 12, 2023, was a crucial conference for addressing climate change, particularly from the perspective of developing countries. While many important issues were discussed, the financial aspects, especially the Loss and Damage fund and broader challenges faced by developing nations, took center stage.

The concept of a Loss and Damage (L&D) fund at COP 28 was undoubtedly one of the most hotly debated topics. Developing countries, bearing the brunt of climate change despite minimal historical emissions, have long advocated for such a mechanism to address the irreversible consequences they face. L&D refers to the unavoidable negative impacts of climate change that developing countries are already experiencing, such as:

- Sea level rise: Inundating coastal communities and ecosystems
- Extreme weather events: Increased frequency and intensity of droughts, floods, heatwaves, and storms
- Glaciers melt: Disrupting water reserves and biodiversity

Ocean Acidification: Threatening marine ecosystems and livelihoods.

These impacts cause irreversible damage to infrastructure, economies, cultures and human lives. Developed countries, historically responsible for the bulk of greenhouse emissions, have an ethical and moral obligation to support vulnerable nations facing these consequences.

At COP 28, the L&D issue finally reached a critical juncture. While a concrete fund was not established, several significant developments took place

- Formal recognition of the issue: The COP final decision acknowledged the urgency of addressing L&D and the need for a "new, additional and adequate funding system".
- Establishment of a transitional committee:  
The committee, composed of representatives from both developed and developing countries, will be tasked with designing the L&D funding arrangement, including sources, eligible criteria, and governance structure.
- Increased momentum and pressure:

The strong advocacy from vulnerable nations and civil society groups, coupled with growing public awareness of the L&D issue, has put pressure on developed countries to act

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Other Financial issues for Developing Countries etc.

→ Climate Finance: Developed countries reiterated their commitment to the \$100 billion annual target for climate finance by 2025, but concerns remain about the delivery and accessibility of these funds for developing countries.

→ Debt relief: Calls for debt relief for developing countries struggling with climate impacts and the associated economic burdens gained traction at COP-28 but no concrete steps were taken in this regard.

→ Technology transfer: Access to clean technologies and expertise remains a critical challenge for developing countries. COP-28 saw some advancements in facilitating technology transfer, but more needs to be done to bridge the gap.

b) What is Solid Waste Management? Discuss different methods.

Solid Waste Management refers to the entire process of collecting, treating, and disposing of solid waste materials that we discard after their use or when they become no longer useful. This waste can range from household garbage and food scraps to agricultural and industrial residues.

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Effective solid waste management is crucial for several reasons

- i) Environmental protection: Improper waste disposal can pollute land, air and water bodies, posing serious environmental and health risks
- ii) Public health: Unsanitary waste conditions attract disease carrying pests and contaminate groundwater, leading to the spread of illness
- iii) Resource conservation: Waste materials often contain valuable resources that can be recovered and recycled, reducing dependence on virgin materials and energy consumption
- iv) Economic benefits: Effective waste management creates jobs in recycling, composting, and other related industries, boosting local economies.

There are multiple methods of Solid Waste Management.

- i) Reduce: The most effective way to manage waste is to prevent its generation in the first place. This involves
  - Not using products that are of single time use
  - Repairing and reusing items instead of discarding
  - Using second hand items
  - Composting biodegradable items

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- Reuse: Reusing items involves finding new ways to utilize waste material before disposal. By donating, creating new items from used material, using materials for ~~the~~ non traditional purposes.
- Recycle: Recycling involves collecting and processing specific material (like paper, glass, and metal) for them to be used again in new products. Effective recycling programs encourage source separation of waste, development of efficient recycling infrastructure, and public education programs.
- Treat: Some waste materials cannot be directly recycled or reused but require treatment before disposal. This may include composting, anaerobic digestion, and ~~and~~ incineration.
- Dispose: Unfortunately, some waste remains after all other methods are exhausted. In such cases, responsible disposal is crucial.
  - Landfills: Engineered sites designed to contain waste safely and minimize environmental impact.
  - Sanitary landfills: Modern landfills with liners and leachate collection systems to prevent environmental contamination.



## c) Write a note on a Balanced Diet.

A balanced diet is one that provides your body with all nutrients it needs to function properly. It includes a variety of foods from all the food groups.

- Fruits and vegetables: These are low in calories and fat while also being high in vitamins, minerals and fibers.
- Whole grains: Whole grains are good source of fiber, vitamins and minerals.
- Lean protein: Lean protein helps build and repair muscles. Good sources of lean protein include fish, chicken, beans, tofu and lentils.
- Healthy fats: Healthy fats are important for heart health, brain function, and nutrient absorption. Good sources of healthy fats include avocados, nuts, seeds and olive oil.

Eating a balanced diet is important for overall health and well being. It can help you

- Maintain a healthy weight
- Reduce your risk of chronic diseases such as heart disease, stroke, diabetes and cancer
- Boost your energy levels
- Improve your mood

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Strengthen your immune system

There are a few things you can do to create a balanced diet.

- Choose a variety of foods from all the food groups
- Fill half your plate with fruits and vegetables
- Choose whole grains over refined grains
- Choose lean protein sources
- Limit unhealthy fats, processed fats, and sugary drinks.

d) Discuss any three renewable energy resources under CPEC.

Under the China Pakistan Economic Corridor (CPEC) multiple public sector development projects have been initiated in the sector of energy. ~~How~~ The majority of these projects ~~have~~ are related to thermal power plants such as the coal fired Sahiwal Plant however ~~these~~ with time renewable energy resource related projects have been increasingly incorporated in the portfolio.

- Hydropower: CPEC has significantly boosted Pakistan's hydropower capacity, making it the largest contributor to

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renewable energy within the corridor. Projects like Dasu Hydropower Project (4300 MW) and Diamer Basha Dam (4500 MW) are prime examples, contributing to a significant 36% rise in hydropower capacity b/w 2017 and 2018. These large scale projects provide clean, reliable energy while mitigating dependence on imported fossil fuels.

2) Solar Power: Recognizing Pakistan's abundant sunshine, CPEC has facilitated the development of several large scale solar power plants. The 1000 MW Qaid-e-Azam Solar Park in Bahawalpur is a shining example, claiming the title of South Asia's largest single site solar PV plant. Such projects not only create ~~set~~ clean energy but also boost local infrastructure and generate employment opportunities.

3) Wind power: Pakistan's vast wind potential is also being harnessed under CPEC. Wind farms like Sindh Coastal Wind Farm ~~(400 MW)~~ (400 MW) and Thimpr Wind Power Project (100 MW) are steadily increasing the share of wind energy in the national grid. Wind power holds immense potential for clean energy generation in coastal areas and contributes to diversifying the energy mix.