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General Science and Ability

Section - I

Q.NO.2 (a) Climate finance is, indeed, the central question for developing countries. Pakistan is no different, as it suffered a loss of $40 bn due to heavy floods of 2022. In the light of COP-28 starting in UAE, Pakistan's focus with regard to climate finance should be:

=> To ensure that enough climate finance is obtained to prepare for climate disasters

=> To devise a plan that enables the use of climate finance for building climate resilient infrastructure.

=> To provide a mechanism through which the obtained finances are utilized for protecting the most vulnerable areas.

(b) Vitamins are classified into two groups

Fat soluble vitamins are soluble in fats and fat solvents. They are insoluble in water. So they are utilized only if there is enough fat in the body Examples are vitamin A, D, E and K.

Water soluble vitamins are soluble in water and so they cannot be stored in the body. 11 types of vitamins are included in this class, example are thiamine, riboflavin etc.

Citrus fruits such as oranges grapefruit, etc contain Vitamin C.

Vitam A can be found in vegetables such as carrots, etc.

Vitaman D is found in foods such as eggs, and also in milk and diary products.

(vitamin VB is found in products such as fish, spinach, etc.

c) The Structure of Eye

The eye is a spherical structure which fits in the eye socket in the skull bone. Following are the main parts of an eye:

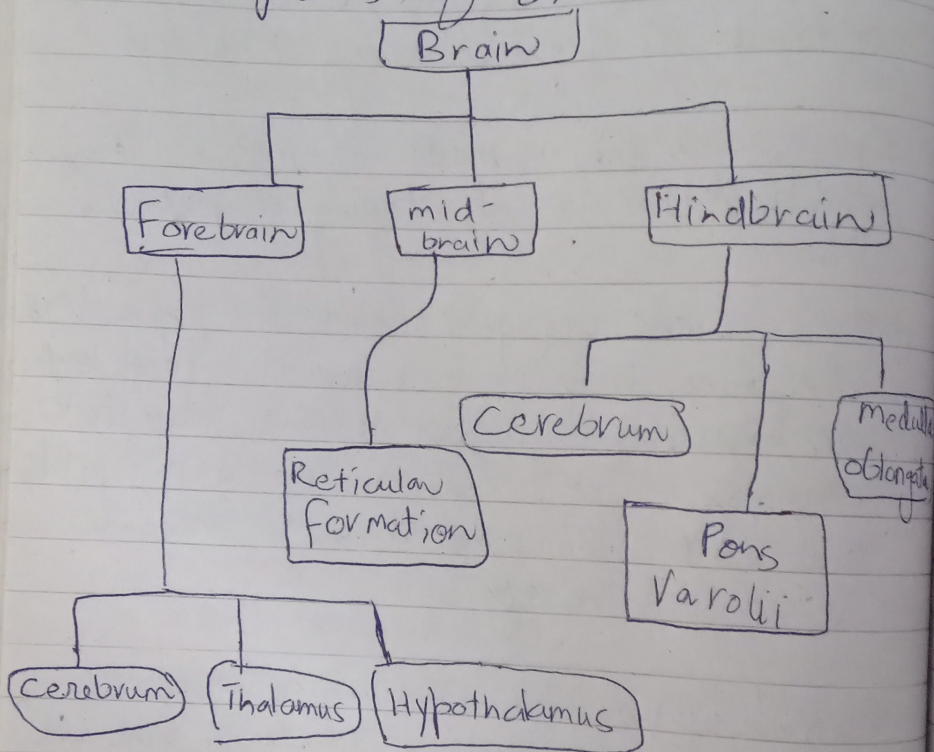Pupil : Pupil is the round black spot in front of the eye. It regulates the amount of light entering the eye.

Irish: Irish is made of muscles. They control the size of opening of pupil.

Lens: Lens lies just behind the pupil. Lens becomes thin to increase it's focal length. This enables us to see distant objects cleanly. To focus on nearer objects the lens becomes thick to decrease it's focal length

Retina : Retina works like a screen a camera film. Retina is full of light and colour sensitive cells. These cells, upon receiving image send electrical signals to the brain, which processes this information to make a mental image of what we see.

The above mentioned parts of an eye explain it's structure.

d Flow chart of different parts of brain:-

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                    ┌────────┐
                    │ Brain  │
                    └───┬────┘
        ┌───────────────┼────────────────┐
   ┌─────────┐     ┌─────────┐      ┌──────────┐
   │Forebrain│     │  mid-   │      │Hindbrain │
   └────┬────┘     │  brain  │      └────┬─────┘
        │          └────┬────┘           │
        │               │        ┌───────┼────────┐
        │          ┌──────────┐  │  ┌──────────┐  ┌──────────┐
        │          │ Cerebrum │  │  │          │  │ Medulla  │
        │      ┌───────────┐   │  │  │  Pons    │  │Oblongata │
        │      │ Reticular │   │  │  │ Varolii  │  └──────────┘
        │      │ formation │   │  └──┴──────────┘
        │      └───────────┘
   ┌────┴────────────────┐
┌─────────┐ ┌────────┐ ┌─────────────┐
│Cerebrum │ │Thalamus│ │Hypothalamus │
└─────────┘ └────────┘ └─────────────┘
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Q.No.3

a)   Global warming is, indeed,
a wild beast and the world
is trying to control this beast.
Climate change and global warming
have emerged as important issues in
recent times. Organizations such

as the UN are focusing on climate action to manage global warming and climate change. Initiatives such as the Paris Agreement and the COP(Conference of Parties) are commendable for coming with a mechanism to control global warming. However, these initiatives are not enough and more needs to be done on the global warming front. The temperature must be controled from crossing the mark of 1.5°C.

(b) . The big bang is the best - supported scientific theory for how the universe was created. 13.7 billion years ago, there was nothing and nowhere. Everything that existed was in a subatomic particle that was billions of times smaller than an atom. The big-bang theory proposes the universe was formed from an infinitely dense and hot core of the material.
According to Islamic tradition, the Quran states that "Allah created

the heavens and the earth,
and all that is between them,
in six days." (7:54)

c) Semi-conductor

A semiconductor is a
material that controls electrical
currents, making it an essential com-
ponent of most modern electronics.
It is used in electrical circuits
and components and patially conducts
electricity.

Semiconductors can be pure
elements, such as silicon or
germanium, or compounds such
as gallium arsenide, etc.

d) An eclipse is a partial or
total blocking of light of one
celestial object by another.
Lunar Eclipse: A lunar
eclipse occurs when Earth
is between the moon and the sun.

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happen at f
earth and m
an exact o

Solar Ecl
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earth and Su
earth, if mov
earth when t
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During a Solar
a shadow ont

which casts a shadow of Earth onto the moon. Eclipses of the moon happen at full moon, when the sun, earth and moon are aligned to form an exact or an almost straight line.

Solar Eclipse: A solar eclipse occurs when moon comes in between earth and sun. When the moon orbits earth, it moves between the sun and earth. When this happens, the moon blocks the light of the sun from reaching earth. During a solar eclipse, the moon casts a shadow onto earth.

Section - II

a)

300 ft fence

Longer piece $= 4$ shorter piece

$x + 4x = 300$

Shorter piece $= x$

$5x = 300$

$x = \dfrac{300}{5}$

$x = 60$

Shorter piece $= 60$ ft

Longer piece $= 60 \times 4 = 240$ ft

b)

$L = 2w + 3$

Perimeter $= 20$ inches

$2(w + 2w + 3) = 20$

$2w + 4w + 6 = 20$

$6w + 6 = 20$

$6w = 14$

$w = \dfrac{14}{6} = \dfrac{7}{3}$

$L = 2\left(\dfrac{7}{3}\right) + 3$

$= \dfrac{14}{3} + 3$

$$= \frac{14 + 9}{3}$$

$$L = \frac{23}{3}$$

c)

Win = 60%
Loss = 24
40% = 24

$$40\% = 24$$
$$60\% = x$$
$$x \cdot 40\% = 24 \times 60\%$$
$$x = \frac{24 \times 60\%}{40\%}$$
$$x = \frac{24 \cdot 4}{40\%}$$
$$x = 36$$

Total matches played during the
year = 36 + 24 = 90 matches.

d)

Ratio   3 : 2   =   x : y
         2 + x ,   6 + y

New Ratio = 4:5

$$\frac{3}{2} = \frac{x}{y}$$

$$\frac{4}{5} = \frac{x+2}{y+6}$$

$$\frac{2}{5}N = y \quad , \quad \frac{3}{5}N = X$$

$$\frac{4}{9}(N+8) = \cancel{y} \; x+2$$

$$\frac{5}{9}(N+8) = y+6$$

$$2N = 5y$$

$$N = \frac{5y}{2}$$

$$\frac{5}{9}\left(\frac{5}{2}y+8\right) = y+6$$

$$\frac{25}{18}y + 8 = y+6$$

New ratio = 4 : 5

$$\frac{3}{2} = \frac{x}{y}$$

$$\frac{4}{5} = \frac{x+2}{y+6}$$

$$3y = 2x \qquad\qquad x = \frac{3}{2}y$$

$$4(y+6) = 5(x+2)$$
$$4y + 24 = 5x + 10$$
$$4y + 24 = 5\left(\frac{3}{2}\right)y + 10$$

$$4y + 24 = \frac{15}{2}y + 10$$

$$24 - 10 = \frac{15}{2}y - 4y$$

$$14 = \frac{15y - 8y}{2}$$

$$14 = \frac{7}{2}y$$

$$\frac{14 \times 2}{7} = y \qquad\qquad x = \frac{3}{2}\overset{2}{\underset{1}{(4)}}$$

$$y = 4 \text{ Ans,} \qquad\qquad x = 6 \text{ Ans,}$$

Q No. 7

(a) $\dfrac{325}{400} = 81.25\%$

(b)   30 - persons   40 kg   10 days
       80 - persons   320 kg   ? days

Per person sugar consumed $= \dfrac{40}{30}$

per person sugar consumed $= \dfrac{320}{80}$
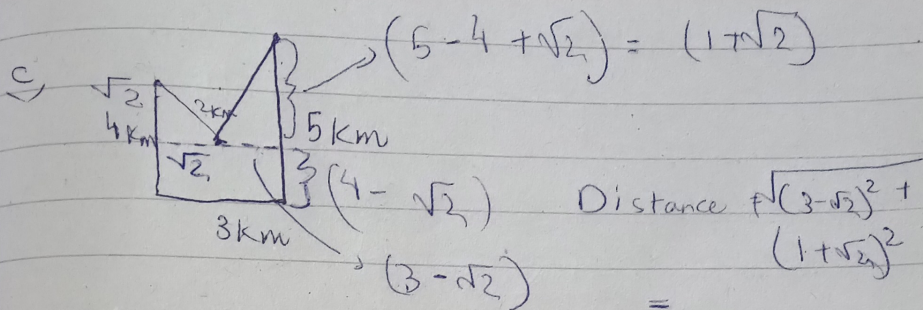
$\dfrac{\frac{40}{30}}{\frac{320}{80}} = \dfrac{10}{x}$

$\dfrac{40}{30} x = 10 \times \dfrac{320}{80}$

$\dfrac{40}{30} x = 40$

$x = \dfrac{40 \times 30}{40}$

$x = 30$

30 days Answer.

c)

$(5 - 4 + \sqrt{2}) = (1 + \sqrt{2})$

$\sqrt{2}$

4 km

2 km

$\sqrt{2}$

5 km

$(4 - \sqrt{2})$

3 km

$(3 - \sqrt{2})$

Distance $= \sqrt{(3 - \sqrt{2})^2 + (1 + \sqrt{2})^2}$

$=$

d)

Radius of a cylinder $= 10$ cm

Height $= 36$ cm

Volume $= ?$

Volume $= \pi (10)^2 (36)$

$= \dfrac{22}{7} \times 3600$

$= \dfrac{79,200}{7}$ cm^3 Ans //