

Date: _____

Day: _____

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COURSE: GENERAL SCIENCE & ABILITY

BATCH: ISB-OB-83

DATE: OCTOBER 21ST 2025

"PART - II"

"SECTION - I"

: Question No 2:

(a)

Data is the new oil

In the fast moving world of digitalization, the phrase, "Data is the new oil" suggests that like oil powered the industrial age, data is driving the digital age. Data now has become a crucial source of innovation, growth, decision-making to drive the economy and prosperity.

Importance of Data in the Digital Age

Previously, just like oil fueled the engines and industries in the past, data now fuels the economy.

It is a form of efficiency in today's digital landscape. The transmission of data is what keeps the economy running.

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Daily Life Examples of Data:

(i)

Navigation and Travel GPS

GPS and Google apps like Maps use data to provide real-life assessment of the ongoing situation to provide us with directions, traffic updates, and estimated time of arrival.

(ii)

Online Shopping

E-commerce sites use data to recommend products, offer deals and showcase what's new in the market based on our preferences.

(iii)

Health and Fitness

Wearable technology Smart watch or fitness apps now use digitally available data and help you improve your lifestyle.

(b)

: Expansion of the Universe w.r.t
blowing balloon :

Date: _____

Our uni
so much
to hum
rapidly
at the
not be
end.

Celestial

In the
is statio
Everything
cannot
Celestial
entire so
even an
expand.

Balloon

When a
surface
expands.
Similarly
and inc
galaxies.
As more
balloon,
air being
related

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Data:

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Our universe is constantly expanding, so much so at a speed unimaginable to humans. The universe is expanding rapidly enough that even if we travel at the speed of light, we will still not be able to catch up to its other end.

Celestial Objects Constantly Drift Apart

In the universe and beyond, nothing is stationary. Nothing is still.

Everything moves at a speed one cannot fathom to believe exists.

Celestial bodies like the stars, entire solar systems, black holes and even an entire galaxy move and expand.

Balloon Analogy Explained

When a balloon is inflated, the surface area increases, the balloon expands.

Similarly, the universe expands and increases the distance between galaxies.

As more air is pushed into the balloon, it expands more. The air being pushed in can be related to the Big Bang Theory after which the expansion began.

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(c) Balanced Diet

Let thy food be thy medicine

A balanced diet is the diet that includes food from five classes. These include Dairy, Protein, Pulses, Vegetables / Fruits and Barley. The purpose of acquiring 7 essential nutrients can be achieved by consuming food from above mentioned classes.

Aim of a balanced diet

Humans need to stay healthy and fit in order to overcome daily challenges. The key here is to obtain a better immune system for sustainable development which can be obtained by targeting 7 essential nutrients in your diet. These are; fats, proteins, carbohydrates, minerals, vitamins, water and fiber which can be attained by a balanced diet mentioned above. When the diet is unbalanced, deficiencies of vitamins like A, D, E or K may occur.

Date: _____

Deficiency

Deficiency
to night
immune

Deficiency
rickets

Deficiency
neurology

GPS

GPS -
a net
location
GPS
and
Earth

World

GPS
sign
ther
an

Deficiency in Vitamins - Diseases

: Vitamin A :

Deficiency in Vitamin A can lead to night blindness, and weakened immune system.

: Vitamin D :

Deficiency in Vitamin D can cause rickets and osteomalacia.

: Vitamin E :

Deficiency in Vitamin E can cause neurological problems.

(d)

GPS - Global Positioning System

GPS - Global Positioning System is a network of satellites providing location information.

GPS uses data to provide location and time information anywhere on Earth.

Working of GPS

GPS satellite transmits signals that receivers collect, use and then calculate the position of an object based on the data provided.

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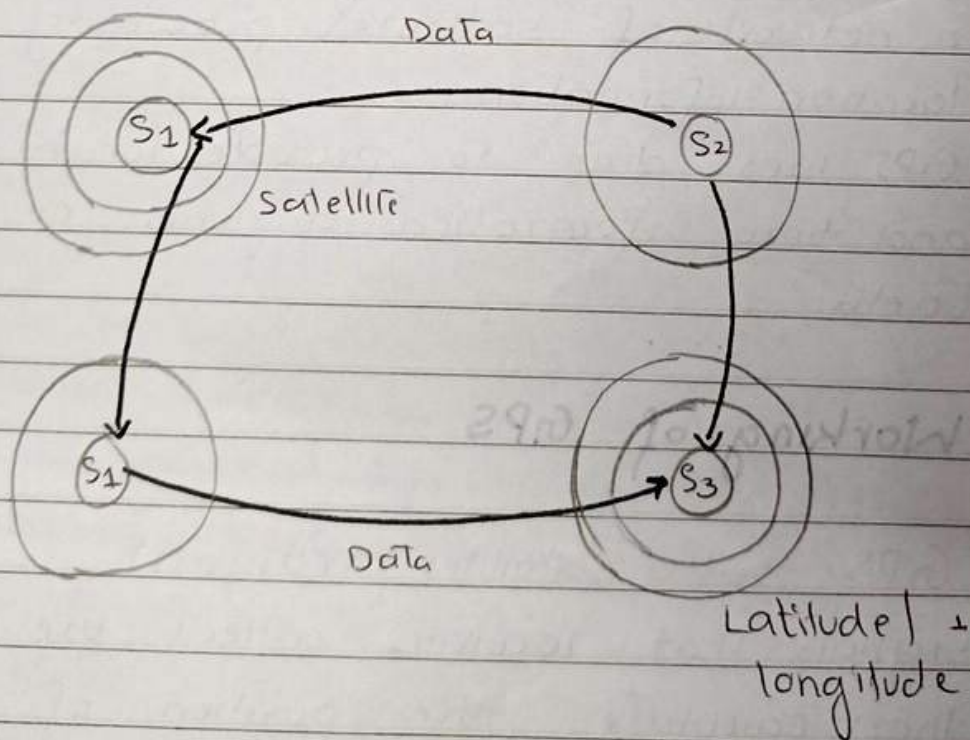
Fiber optics :

Fiber optics are thin strands of glass like threads transmitting data like light signals. These are mainly used for internet provision.

Measuring location :

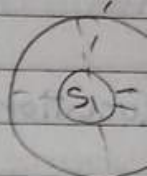
2D-location : Requires signals from at least 3 satellites for data transmission.

3D-location : Requires signals from at least 4 satellites for longitude, latitude and altitude data.



2D-location

Date: _____



Longitude

Population

Pakistan population has a clumped distribution.

Causes

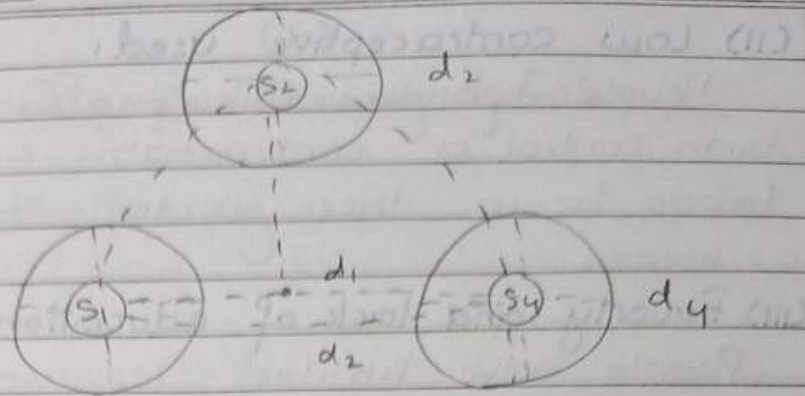
(i) High

sizes have either

Day: _____

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Longitude + Latitude + Altitude

3D- location

: Question No 5 :

(a)

Population Expansion in Pakistan

Pakistan stands as the fifth most populous country in the world. It has a population in masses mostly clumped up together.

Causes of Population Expansion

(i) High Birth Rate :

In Pakistan, large family sizes have been observed due to either cultural or religious factors.

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(ii) Low contraceptive used:

People consider talking about birth control or contraceptive a taboo, hence there is little to no awareness.

(iii) Poverty and lack of education

People have limited resources or education to have a better family management and planning system.

Measures to Control Population Expansion

(i) Family planning education

Increase awareness among people, especially those of rural areas, to help control birth rate.

(ii) Woman Empowerment

Educate and economically support woman.

(iii) Healthcare Access:

Improve the reproductive healthcare of women.

(b)

Remote Sensing & GIS

Remote Sensing

Calculating data about Earth's surface using satellites or aerial imagery. These help in understanding the road structure, mountain range, mapping out data and information.

Role of GIS

The ge-Geographic Information System - GIS is a framework of gathering, managing and analyzing data to form maps.

(i) Data analysis and mapping

GIS helps analyse and visualize environmental data.

(ii) Environmental Monitoring

Tracking changes like deforestation, pollution or climate impact.

(iii) Decision-Making

Aids in planning and managing natural resources.

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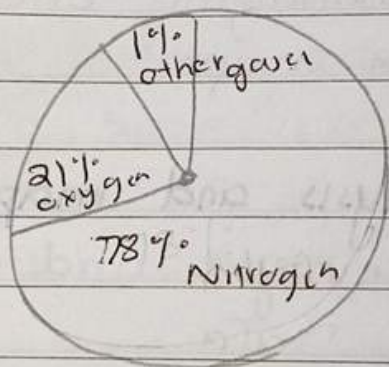
(c) (d)

The Atmosphere is the Blanket

The atmosphere is a gaseous layer surrounding the Earth. The atmosphere blankets the Earth. It keeps the temperature stable and protects everything on Earth from harmful radiations (U-V radiations).

Composition :

The atmosphere is mainly (78%) nitrogen and 21% oxygen and other gases.



Temperature Regulation

The atmosphere traps heat via greenhouse gases like CO_2 (carbondioxide) and CH_4 (methane). Without this, Earth's temperature would be about -18°C instead of -15°C .

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The Blanket

gaseous layer
The atmosphere
It keeps the
and protects
from harmful
rays.

mainly
21% oxygen

absorbs heat
like CO₂
(Methane)
temperature
instead of

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Protection from UV radiation

The ozone layer O₃ absorbs
about 97-99% of the harmful
ultraviolet radiations that are
generated by the sun. The atmosphere
shields the Earth against these
harmful rays.

(d)

Define the following

(i)

Hydrometer

A hydrometer is an instrument
used to measure the density of a
liquid.

It is commonly used in brewing
or chemical industries.

(ii)

Epicenter

Point on Earth's surface directly
above an earthquake's origin,
also called: focus.

It helps in assessing the damage
and impact of the earthquake.

(iii)

Eye wall of cyclone

Intense ring of thunderstorm and rain

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surrounding the "eye" of a cyclone.
Strongest winds and heaviest
rain occur here.

(iv)

Deep focus

In photography, it refers to a large
depth of field where much of the
image is focused.

(v)

Light Year

Distance light travels in one year
in a vacuum.

It is the vast unit of measuring
distance between celestial bodies.

$$1 \text{ LY} = 5.8 \times 10^{12} \text{ miles}$$

PART II - SECTION - II

: Question 7 :

(c)

Spot Error / Complete

Day:

a cyclone
heaviest

to a large
much of the

one year

measuring
al bodies

files

ON - II

te

to:

Day:

(1) 2, 6, 18, 54, 162, 486 (which does not fit?)

Solution

$$\begin{array}{cccccc}
 2 & 6 & 18 & 54 & 162 & 486 \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 2 \times 3 & 6 \times 3 & 18 \times 3 & 54 \times 3 & 162 \times 3 & \\
 = 6 & = 18 & = 54 & = 162 & = 486 &
 \end{array}$$

$$\begin{array}{l}
 2 \times 3 = 6 \\
 6 \times 3 = 18 \\
 18 \times 3 = 54 \\
 54 \times 3 = 162 \\
 162 \times 3 = 486
 \end{array}$$

hence, the correct sequence is presented above with each number in the series being multiplied by 3

(11) 3, 5, 7, 11, 13, — 17

The number

{ 3, 5, 7, 11, 13 } are a set of prime numbers, next in line is 17

: 3, 5, 7, 11, 13, 17

(a)

Volume of a Sphere

$$\text{volume of a sphere} = \frac{4}{3} \pi r^3 \text{ cm}^3$$

$$\text{radius} = \frac{D}{2} = \frac{14}{2} = 7 \text{ cm}$$

$$\text{and } \pi = 22/7$$

So,

$$\text{Volume} = \frac{4}{3} \times \frac{22}{7} \times (7 \times 7 \times 7) \text{ cm}^3$$

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$$\text{Volume} = \frac{4}{3} \times 22 \times 49 \text{ cm}^3 \quad (1)$$

$$\text{Volume} = \frac{4312}{3} \text{ cm}^3$$

$$\text{Volume} = 1437.3 \text{ cm}^3$$

Hence the volume of the given sphere is 1437.3 cm^3

(b)

Smallest Share

$$\text{Total Savings} = 25,000 \text{ Rs} \quad (11)$$

$$\text{Ratio} = 1 : 2 : 3 : 4 : 5$$

(i) Sum of ratio

$$1 + 2 + 3 + 4 + 5 = 15$$

Finding smallest share

5000

$$\text{Share} = \frac{25000}{15}$$

$$\text{Share} = 1666.66 \text{ Rs}$$

Date: _____

Checking

and

25

a +

La

$$\begin{array}{r} 3 \overline{) 5000} \\ 3 \\ \underline{30} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 20 \end{array}$$

STS

LG

(d) (d)

A Triangle with Sides

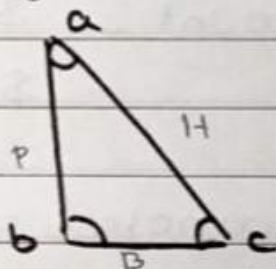
Checking type:

$$(5)^2 = 25 \text{ cm}$$

$$(12)^2 = 144 \text{ cm}$$

and

$$25 + 144 = 169 = 13^2 \text{ cm}$$

hence it is a right angle $\triangle$ 

$$a + b + c = (5)^2 + (12)^2 \pm (13)^2$$

$$\angle a + \angle b + \angle c = 180^\circ$$

(-) leaving

Question no 6:

(d)

Unscramble

SISTAICITS : STATISTICS

LGEËBMRÄ : ALGEBRA

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(b) Camera Discount

Original price = 200\$

Discount = 25%

Plus tax = 6%

Total amount paid = ?

Discount = 25% of 200

$$= \frac{25}{100} \times 200$$

$$= 50$$$

Price after discount = \$200 - \$50

$$= \$150$$

A tax of 6% imposed = 6% of \$150

$$= \frac{6}{100} \times 150$$

$$= \$9$$

Tax paid = \$150 + \$9

and Total = \$159

amount

(c)
Bicycle ETA

Distance = 36 km

Speed = 18 km/hr

Time = ?

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

here

$$\text{Time Taken} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time} = \frac{36 \text{ km}}{18 \text{ km/hr}}$$

$$\text{Time} = 2 \text{ hours}$$

Started at 1 pm

Add in 2 hours = 1 + 2 = 3

Will reach by 3 pm

(a)
Packet of Candies

Apple : 3

Berry : 6

Cherry : 2

Date : 5

if apple exceed date by 35
berry candies = ?

Date: _____

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Assuming ,

$$\text{Apple} = 3x$$

$$\text{Berry} = 6x$$

$$\text{Cherry} = 2x$$

$$\text{Date} = 5x$$

Apple exceed date by 35

$$5x - 3x = 35$$

$$2x = 35$$

$$[x = 17.5]$$

Now ,

$$\begin{aligned}\text{Berry Candies} &= 6x \\ &= 6(17.5) \\ &= 105\end{aligned}$$

The Berry Candles will be 105.

