Agha Hassan
Online Batch - 82

Mock Exams - CSS 2026

Part - II

Section - I

Q. No. 2

a.

Yes, data can be considered oil in today's world. Like oil powered the industrial revolution, data drives the digital revolution. In today's world, information is the most valuable resource, used by industries, governments and individuals to make decisions, predict trends, and improve sevices.

Examples:

1. Online Shopping:

Websites like Daraz or Amazon use data about our browsing and buying habits to show personalized product recommendations.

2. Soual Media:

Platforms such as Facebook and Instagram collect user data to display targeted advertisements and suggest content we like.

3. Google Maps:

It uses real-time location data from users to show traffic conditions and suggest the fastest route.

Q. No. 2

b.

The expansion of universe is similar to how a balloon expands when air is blown into it. When the balloon is inflated, every point on its surface moves away from every other point – not because the points themselves are moving, but because the surface itself is stretching.

In the same way, as the universe expands, galaxies move away from each other because space itself is stretching, not because galaxies are flying through space.

Resemblance:

1. The baloon's surface represents space. Dots on the balloon represent galaxies. As the balloon expends, distances between dots increase, like distances between galaxies increase in the expanding universe.

8. No. 2

C.

A balanced diet means eating the right amount of different types of food - including carbohydrates, proteins, fats, vitamins, minerals, fiber, and water - in proper proportions to keep the body healthy and functioning properly.

Deficiency effects:

1. Vitamin A deficiency: Causes night blindness and poor vision, especially in dim light.

2. Vitamin D deficiency: leads to rickets in children and osteomalacia in adults, causing weak and soft bones.

3. Vitamin E deficiency: Results in muscle weakness, nerve problems, and weakened immune system.

Q. NO. 2

d.

1. Working of GPS:

The Global Positioning System (GPS) works through a network of about 24 satellites orbiting the Earth. Each satellite continuously sends signals with its location and time. A GPS receiver (like in a phone or car) receives signals from at least four satellites and calculates its exact position (latitude, longitude, and altitude) using the time delay of each signal.

2. Fiber Optic:

Fiber optics are thin strands of glass or plastic that transmit data as light signals instead of electric signals. They are used in internet cables and telecommunication because they provide very high-speed and long-distance data transfer with minimal loss.

3. Measuring 2D and 3D locations:

- 2D location (Latitude and longitude):
  Measured using signals from

at least three satellites, which give position on a flat map.

- 3D Location (Latitude, Longitude and Altitude):

Requires signals from four or more satellites to calculate the receiver's height (altitude) along with its surface position.

Q. No. 4

a.

Chlorophyll is a green pigment found in the chloroplasts of plants, algae, and some bacteria. It plays a vital role in the process of photosynthesis, by which plants make their own food.

Functions and Importance:

1. Absorbs sunlight: Chlorophyll captures light energy, mainly from the blue and red parts of the spectrum.

2. Converts energy: It helps convert light energy into chemical energy, producing glucose and oxygen from carbon dioxide and water.

3. Gives green colour: It reflects green light, which is why plants appear green.

4. Supports life: Without chlorophyll, plants couldn't produce food, and thus, life on Earth would not survive as plants are the base of all food chains.

Q. No. 4

b.

Ribosomes are tiny, round structures found in all living cells - either floating freely in the cytoplasm or attached to the endoplasmic reticulum (Rough ER). They are known as the protein factories of the cell.

Role in Protein Synthesis:

1. Reading mRNA: Ribosomes read the messenger RNA (mRNA) sequence, which carries genetic instructions from DNA.

2. Linking amino acids: They join amino acids together in the correct order, using transfer RNA (tRNA), to form a specific protein chain.

3. Forming proteins: The growing chain folds into a proper three-dimensional protein that performs functions like enzyme activity, repair and cell structure.

Q. No. 4

C.

Solid waste management refers to the proper collection, treatment, and disposal of waste materials to protect health and the environment. Different methods are used depending on the type and quantity of waste.

Main Methods:

1. Landfilling:

Waste is buried in specially designed land areas. Modern landfills use liners and covers to prevent pollution of soil and groundwater.

2. Incineration:

Waste is burned at high temperatures, reducing its volume and sometimes generating electricity or heat. However, it must be controlled to avoid air pollution.

3. Recycling:

Materials like paper, glass, plastic, and metals are processed and reused, reducing the need for new raw materials.

4. Composting :

Organic waste (food and plant materials) is decomposed by microorganisms to produce natural fertilizer for soil enrichment.

5. Waste-to-Energy (WTE) :

Advanced methods convert waste into energy (electricity or fuel) using thermal or biological processes.

Q. No. 4

d.

i) Biofuel:

A biofuel is a type of renewable fuel made from biological materials such as plants, animal waste, or algae. Examples include ethanol and biodiesel, used as alternatives to fossil fuels.

ii) Adulteration:

Adulteration means mixing inferior or harmful substances with food, fuel, or other products to increase quantity or profit. It lowers quality and can be dangerous to health.

iii) Hydrosphere:

The hydrosphere includes all the water on Earth - in oceans, rivers, lakes, glaciers, underground, and as vapor in the atmosphere. It covers about 71% of Earth's surface.

iv) Troposphere:

The troposphere is the lowest layer of the Earth's atmosphere, where weather changes (like rain, wind and clouds) occur. It extends to about 8-15

km above the Earth's surface.

v) Isotopes:

Isotopes are atoms of the same element that have the same number of protons but different numbers of neutrons. For example, Carbon-12 and Carbon-14 are isotopes of carbon.

Section - II

Q. No. 6

a.

Apple : Berry : Chewy : Date = 3 : 6 : 2 : 5

Apple candies = Date candies + 35.

Apple = $3x$, Berry = $6x$, Cherry = $2x$, Date = $5x$.

$$\text{Apple} - \text{Date} = 35$$
$$3x - 5x = 35$$
$$-2x = 35$$
$$2x = 35$$
$$x = 17.5$$

$$\text{Berry} = 6x = 6 \times 17.5 = \boxed{105}$$

b.

- Price = $200
- Discount = 25%
- Sales tax = 6%

$$\text{Discount} = 25\% \text{ of } 200 = \frac{25}{100} \times 200 = 50$$

- Price after discount = $200 - 50 = 150$
- 6% tax = $\frac{6}{100} \times 150 = 9$.
- total amount paid = $150 + 9 = 159$.

c.

Distance = 36 km
Speed = 18 km / hour
Start time = 1:00 PM

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{36}{18} = 2 \text{ hours}$$

Time taken = 2 hours.

⇒ 1:00 + 2 hours = **3:00 PM**

d.

i. Statistics.

Q. No. 7

a.

Diameter = 14 cm

Radius = $\frac{14}{2}$ = 7cm

$\pi = 22/7$.

Volume of a sphere

$V = \frac{4}{3}\pi r^3$

$V = \frac{4}{3} \times \frac{22}{7} \times (7)^3$

$V = \frac{4}{3} \times \frac{22}{\cancel{7}} \times 3\cancel{43}^{49} = \frac{4}{3} \times 22 \times 49$

$V = 1437.3 cm^3$

b.

total savings = RS. 25,000

Ratio = 1:2:3:4:5

total parts = 1+2+3+4+5 = 15

1 part = $\frac{25000}{15}$ = 1666.6.

Smallest share

= 1 × 1666.6 = 1666.6 Rs

c.

i. 2, 6, 18, 54, 162, 486

all numbers fit.

ii. 3, 5, 7, 11, 13, ___

⇒ 3, 5, 7, 11, 13, 17

d.

$a = 5$ cm

$b = 12$ cm

$c = 13$ cm

~~$(5)^2 + (12)^2 + (13)^2 = 25 + 144 + 169$~~

$(5)^2 + (12)^2 = 25 + 144 = 169$

$= (13)^2$

it is a right angle triangle

$\angle C = 90^\circ$

$\sin A = \frac{\text{Opposite / perp}}{\text{hyp}} = \frac{12}{13}$

$A = \sin^{-1}\left(\frac{12}{13}\right) = 67.38^\circ$

$B = 90 - A^\circ = 90 - 67.38^\circ = 22.62$

$\angle A = 67.38^\circ > \angle B = 22.62 > \angle C = 90^\circ$