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Section-I

Date: _____

Q2/ @ Yes, I agree that data is the new oil because in today's world, data has become a valuable resource just like oil was in the past. Companies and governments use data to make decisions, improve services, and earn profits.

Examples:

- ① Websites like amazon and daraz use customer data to suggest products
- ② Platforms such as Facebook, instagram use data to show ads that match user's interests.
- ③ Google maps uses data from millions of users to show traffic updates.
- ④ The expanding universe can be compared to a blowing balloon. When you blow air into a balloon, its surface stretches, and every point moves away from the others. Similarly, galaxies in the universe are moving apart as space itself expands. The galaxies are not moving through space, rather, space itself is stretching just like the surface of the balloon.
- ⑤ A balanced diet means eating all types of food in the right amount including carbohydrates,

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Fats, proteins, vitamins, minerals and water, to keep body healthy and strong.

Deficiencies: Vitamin A: causes night blindness and weak immunity.

Vitamin D: Causes weak bones, rickets in children, and osteomalacia in adults.

Vitamin E: leads to muscle weakness and problems in vision and nervous system.

④ GPS: Global positioning system works through a network of satellites orbiting earth. A GPS receiver gets signals from at least four satellites. By calculating the time taken for the signals to reach, the receiver determines its exact location on earth.

Fiber optic: It is a thin glass or plastic wire that transmits data as light signals. It allows very fast and clear communication over long distances.

2D: Measured using signals from 3 satellites

3D: Measured using signals from 4 satellites

Q3. @ Cells form organelles to perform specific functions efficiently and to maintain organization within the cell. Each organelle carries out a unique job, just like different departments in office.

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Mitochondria: It is the powerhouse of the cell. It is double membranous and self replicating organelle. At mitochondria, the process of cellular respiration takes place and as a result, of the synthesis of ATP takes place.

- ⑥ **Doping:** The process of adding small amount of impurities to a pure semi-conductor like silicon, etc to improve its electrical conductivity.

Types of semiconductor:

- ① **Intrinsic:** A semi-conductor in its pure form.
e.g. silicon, germanium, etc.
- ② **Extrinsic:** When impurity is added to a pure semiconductor. Any doped semiconductor is extrinsic.
Further divided into N-type (negative) and P-type (positive).

© **Merits of volcanic eruption:**

- Adds minerals and nutrients to the soil, making it more fertile.
- Creates new landforms like islands and mountains.
- Provides geothermal energy sources.

De merits:

- Causes loss of life and property due to lava, ash, and gases.

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- Leads to air pollution and affects climate temporarily.
- Destroys crops and vegetation, displacing people and animals.

④ Dengue: It is a viral infection transmitted by the bite of infected mosquitoes, primarily the *Aedes aegypti* mosquito.

Causative agents: The causative agent is dengue virus, a flavivirus transmitted to humans.

Symptomology:

- High fever
- severe headache and joint pain.
- Nausea, vomiting, and skin rash
- In severe cases: bleeding, low platelet count, and organ failure.

Remedies:

- Community cleanliness and awareness help control the spread.
- Prevent mosquito bites by using repellents, nets, and removing stagnant water.
- No specific cure; treatment focuses on rest, fluids, and pain relief.

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Section-II

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Q7, Q

$$d = 14 \text{ cm}$$

$$\pi = \frac{22}{7}$$

$$V = ?$$

sol

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

$$= \frac{4}{3} \times \frac{22}{7} \times (14)^3$$

$$= \frac{88}{27} (2744)$$

$$= \frac{241,472}{27} = 11498.66 \text{ cm}^3$$

Q8

$$5 \text{ friends} = 25000$$

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

$$\text{smallest share} = ?$$

sol

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

$$= \frac{25000}{15} = 1,666.67$$

smallest ~~red~~ share is of ratio 1 ie, $1,666.67$

Q9

$$(i) 2, 6, 18, 54, 162, 486$$

There is no error in this series as all are multiplied by 3 to get the next number.

$$(ii) 3, 5, 7, 11, 13, 17, ?$$

All are prime numbers.

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① sides = 5 cm, 12 cm, 13 cm.

3 angles = ?

sol/ Triangle check = $5^2 + 12^2$

$$= 169 = 13^2$$

So, it is a right angled triangle

= longest side 13 cm = 90° Angle A = 5 cm, Angle B = 12 cm, Angle C = 90°

$$\sin A = \frac{5}{13}$$

$$A \approx 22.62^\circ$$

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

$$B = 67.38^\circ$$

$$A = 22.6^\circ$$

$$B = 67.38^\circ$$

$$C = 90^\circ$$

Q6/② Apples, berry, cherry, date = 3:6:2:5

sol/

Apple candies exceed date candies by 35

$$-3x + 5x = 35$$

$$+2x = 35$$

$$x = 17.5$$

Berry candies = $6x$

$$= 6(17.5)$$

$$= 105$$

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⑥ $OP = \$200$

off / discount = 25%

Tax = 6%

sol_n $OP \times \frac{\text{discount rate}}{100} = \text{discount price}$

$$DP = \frac{200}{100} \times 25\% = \$50$$

$$\$200 - 50 = \$150$$

$$\text{Plus } 6\% = \frac{36}{100} \times 150 = \$9$$

$$\text{So, } \$150 + \$9 = \$159$$

⑦ $d = 36 \text{ km}$

$$s = 18 \text{ km/hr}$$

$$\text{start time} = 1 \text{ pm}$$

$$\text{reach time} = ?$$

sol_n $\text{Time} = \frac{d}{s} = \frac{36}{18} = 2 \text{ hours}$

$$1:00 \text{ pm} + 2 \text{ hours} = 3:00 \text{ pm}$$

⑧ ① Statistics

② Algebra