

Name
Batch

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RWP-013-73

Part II

Section-I

Question. 3

Answer. a

Why cell form organelles:
Compartmentalization

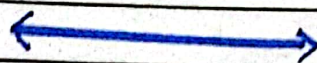
organelles create a specialized microenvironment to carry out distinct biochemical processes efficiently and simultaneously.

Efficiency

organelles optimize specific functions like energy production or production of synthesis.

Regulation

organelles help regulate cellular processes by isolating or concentrating specific molecules.



Answer (b.)

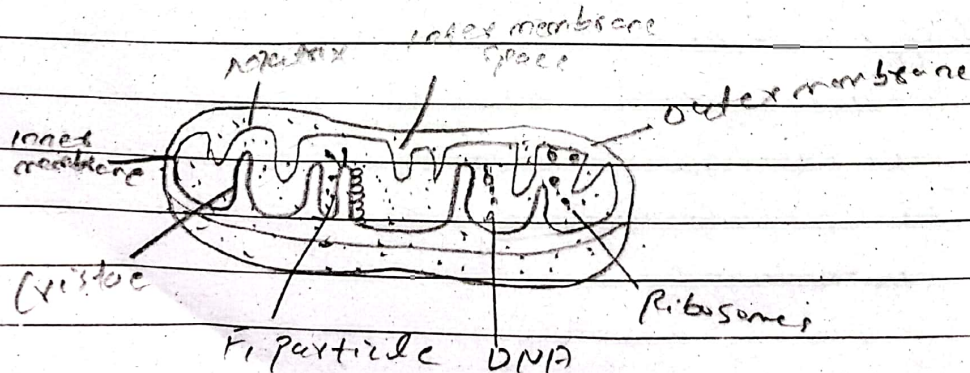
Mitochondria

Mitochondria are very important organelles. They are only present in eukaryotic cell. They are involved in manufacturing & supply of energy. Therefore, mitochondria is also called power house of cell. They are different in size and number in each cells.

Structure of Mitochondria

The mitochondria may be filament shape.

Mitochondria are bounded by two membranes. The outer membrane is smooth. The inner membrane have many foldings called cristae. The inner part of cristae contains small knob like structure.



Functions of Mitochondria

Many important metabolic processes take place in mitochondria. There are Krebs cycle, fatty acid metabolism etc. Energy released from these organic food during these metabolic processes. This energy is transferred to rich energy compound ATP. ATP provides energy on cell demand and ATP is broken to ADP. This ADP absorb energy from mitochondria and later on become ATP.



Answer 3 (c)

Doping:

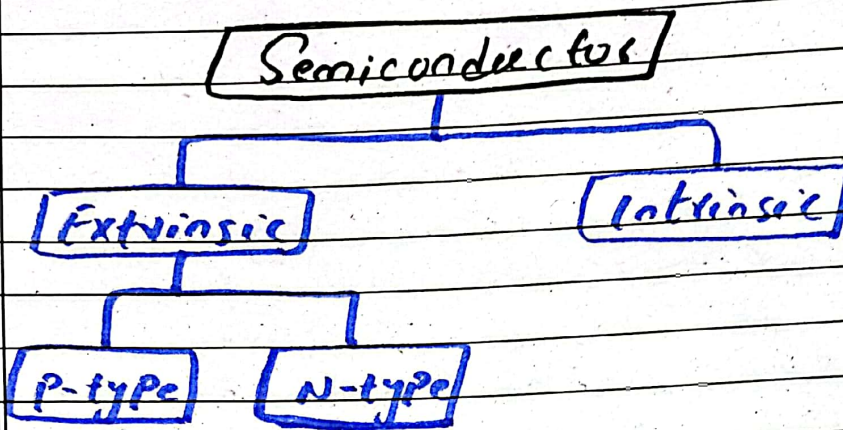
Definition:

Doping is an intentional introduction of small amount of impurity atoms into an intrinsic semiconductor to change its electrical conductivity by increasing free charge carriers.

Types of Semi-conductors:

A semiconductor is a material whose conductivity properties lies between the conductor and insulators. There are two types of semi-conductor.

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Intrinsic Semiconductors.

These are pure semi-conductors without any impurities. They have an equal number of electrons and holes, making $p = n$.

Extrinsic

The conductivity of these semiconductors were determined by impurities, that are added to the material. They are further divided into:

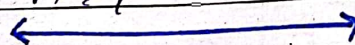
- P-type
- N-type

→ P-type

Doped with an element that creates holes, making $p > n$.

→ N-type

Doped with an element that creates an allot of "free electrons", making $n > p$.



Answer 3 (d)

Dengue

Dengue is an mosquito-borne viral disease that has rapidly spread in all regions in recent years. Dengue is transmitted mainly from female mosquito.

Symptoms

- 1- Incubation 4-10 day after mosquito bite
- 2- High fever, headache, myalgia, joint pain, severe Bone Pain, rashes, nausea, vomiting.
- 3- warning signs are abdominal pain, persistent vomiting, mucosal bleeding.

Remedies / Management

- 1- Close monitoring of signs of plasma leakage and delayed bleeding
- 2- Advanced care should be provided like blood transfusion if needed, ICU support



Question - 5

Answer 5 (a)

Cause and Control measures of population explosion in Pakistan:

Causes:

- 1- Lower female education and limited participation in workforce correlate with higher fertility.
- 2- Traditional norms favor larger families and resistance to family planning in some communities.
- 3- Rural / remote areas often lack of contraceptive availability and reproductive health services.
- 4- Higher child mortality prompt families to have more children as insurance.

Control measures:

- 1- Improve girl education, vocational training and economic opportunities.
- 2- Incentivize smaller families, ensure maternity / paternity policies, and enforce law

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against child marriage

3. Cultural sensitive campaigns promoting benefits of smaller families

4. Reduce child mortality so families do not need to have extra children



Answer 5 (C)

Atmosphere as Earth Blanket - Justification

1. Provides oxygen for respiration and carbon dioxide for photosynthesis which is essential for life

2. Drives weather and climate cycle that sustain ecosystem and agriculture

3. Stratospheric ozone filter harmful ultra violet radiation, protecting living organism from DNA Damage.

4. Enable propagation of sound and provides lift for bird and aircraft

5. It burns meteoroids, reducing

impacts on the surface.

Conclusively, like a blanket, the atmosphere maintains conditions sustainable for life and shields earth from hostile space environment.



Answer 5 (d)

(i) **Hydrometer:**

Hydrometer is an instrument used to measure the specific gravity of liquid compared to water. For instance, sugar solution, battery acid.

(ii) **Epicerter**

point on earth surface directly above the hypocenter (focus) of an earthquake, location of maximum perceived shaking at surface.

(iii) **Eye wall of cyclone:**

Ring of intense thunderstorm surrounding the eye of tropical cyclone, characterized by strongest wind and heavy rainfall.

(iv) **Deep focus:**

An earthquake focus occurring at a depth greater than 300 km.

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~~beant~~ beneath earth surface

v1 Light years:

Light year is unit of astronomical distance. the distance light travel in one julian year in vacuum equal approximately 9.4607×10^{12} Km.

Section. II

Question: 6

Answer 6 (a)

Solution:

Ratio A : B : C : D = 3 : 6 : 2 : 5
Let common factor = x

Then

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

$$5x - 3x = 2x = 35 = x = 17.5$$

$$\cdot 2x = 35 \Rightarrow x = 17.5$$

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

Answer : 105 Berry candies.

Answer 6 (B)

Solution,

Given : price = \$ 200

Discount = 25 %

$$\text{Discount amount} = 0.25 \times 200 \\ = \$ 50$$

$$\text{Sale after discount} = 150 \\ 200 - 50 \\ = 150$$

$$\text{Tax} = 0.6 \% \text{ on sale price} = \\ 0.6 \times 150 = \$ 9 \\ 150 + 9 = \$ 159$$

$$\boxed{\text{Answer} = \$ 159}$$

Answer 6 (C)

Solution,

$$\text{time} = \text{distance} / \text{speed}$$

Given distance = 36 km,

Speed = 18 km

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

Start time = 1:00 pm $\rightarrow$ Arrived
1:00 pm + 2 hours = 3:00 pm

$$\boxed{\text{Answer} = 3 \text{ pm}}$$

Answer 6 (d)

Solution.

- (i) STATISTICS $\rightarrow$ STATISTICS
- (ii) ALGEBRA $\rightarrow$ ALGEBRA.

↔
Question : 8

Answer 8 (c)

Solution.

$$lw = 8 \times 6 = 48$$

$$lh = 8 \times 4 = 32$$

$$wh = 6 \times 4 = 24$$

$$\text{Sum} = 48 + 32 + 24 = 208 \text{ square meter}$$

2. Volume

Formula: $V = l \times w \times h = 8 \times 6 \times 4$
compute

$$8 \times 6 = 48 ; 48 \times 4 = 192$$

$$\text{volume} = 192 \text{ m}$$

Answer

$$\text{TSA} = 208 \text{ square}$$

$$\text{volume} = 192 \text{ m}$$

Answer 8 (d)

Solution,

family 8, men and women
equal in number
 $\Rightarrow$ men = women = 4

$$\begin{aligned} \text{Average per men} &= 72 \text{ kg} \\ \text{Consumption} &= 4 \times 72 = 288 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Average per women} &= 50 \text{ kg} \\ 4 \times 50 &= 200 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Total original family consumption} &= \\ 288 + 200 &= 488 \text{ kg} \end{aligned}$$

Then one more woman
joined $\rightarrow$ new total member = 9.
Now average = 67 kg per person.
So new total consumption is
 $= 9 \times 67 = 603 \text{ kg}$.

$$\begin{aligned} \text{Change Consumption} &= \frac{\text{new total} - \text{original}}{\text{total}} \\ &= 603 - 488 = 115 \text{ kg} \end{aligned}$$

Answer is 115 kg.

Result = 115 kg