SaraS

# Science

10

## Supplement

**Model Question Papers**
**Unit Test Questions**
**Practicals**

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## Saras Science Book Contains

1. Line by line questions.
2. Book Back solved questions.
3. Additional solved questions.
4. NEET based multiple choice questions.
5. Solved model question papers- 4 Nos.
6. Unit test questions - Chapter wise.
7. Questions are separated for 1 mark, 2 marks, 4 marks and 7 marks.
8. Diagrams are made easier for students to draw.
9. Key words are coded.
10. Practicals are supplemented.
11. Formulae are given for memory.

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# 18 Heredity

## Part - I 1 Mark

**Choose the Correct Answer**

1. 9 : 3 : 3 : 1 ratio is due to
   a) Segregation
   b) Crossing over
   c) Independent assortment
   d) Recessiveness
2. The _____ units form the backbone of the DNA.
   a) 5 carbon sugar
   b) Phosphate
   c) Nitrogenous bases
   d) Sugar phosphate
3. Okazaki fragments are joined together by _____.
   a) Helicase
   b) DNA polymerase
   c) RNA primer
   d) DNA ligase
4. The number of chromosomes found in human beings are _____.
   a) 22 pairs of autosomes and 1 pair of allosomes.
   b) 22 autosomes and 1 allosome
   c) 46 autosomes
   d) 46 pairs autosomes and 1 pair of allosomes.
5. Physical expression of a gene is called
   a. genotype b. Phenotype
   c. Homotype d. Heterotype
6. V-shaped chromosome is called
   a) metacentric b) acrocentric
   c) telocentric d) sub-metacentric
7. It is not a nitrogenous base.
   a) Adenine b) Cytosine
   c) Thymine d) Leucine
8. Choose the correct pair
   a) A º T b) G º C
   c) A º C d) T º G
9. The short segments of DNA synthesized are called ..... strand.
   a) Leading b) Lagging
   c) Terminus d) Primer
10. ..... is caused by the mutation of a single gene.
    a) Sickle cell anaemia
    b) Fever
    c) Cold
    d) Down's syndrome

## Part - II 2 marks

1. What are allosomes?

   Refer Saras Science Pg No : 416 ; Q No : 3

2. What are Okazaki fragments?

   Refer Saras Science Pg No : 416 ; Q No : 4

1. c 2. d 3. d 4. a 5. b 6. a 7. d 8. b 9. b 10. a

3. Why is euploidy considered to be advantageous to both plants and animals?
Refer Saras Science Pg No : 416 ; Q No : 5

4. Match the following

| | |
|---|---|
| 1. Autosomes | - Trisomy 21 |
| 2. Diploid condition | - 9:3:3:1 |
| 3. Allosome | - 22 pair of chromosomes |
| 4. Down's syndrome | - 2n |
| 5. Dihybrid ratio | - 23rd pair of chromosome |

Refer Saras Science Pg No : 415 ; Q No : IV

5. What is a karyotype?
Refer Saras Science Pg No : 427 ; Q No : 6

6. What is Telomere?
Refer Saras Science Pg No : 428 ; Q No : 14

7. Write short note on sickle cell anaemia.
Refer Saras Science Pg No : 428 ; Q No : 22

8. Name the enzymes involved in DNA replication.
Refer Saras Science Pg No : 428 ; Q No : 13

9. State true or false. If false give the correct statement
(i) Male and female have equal number of autosomes.
Refer Saras Science Pg No : 426 ; Q No : 6
(ii) There are 12 base pairs in a complete turn of DNA.
Refer Saras Science Pg No : 426 ; Q No : 7

10. Mention the symptoms of Down's syndrome.
Refer Saras Science Pg No : 428 ; Q No : 21

## Part - III

**4 marks**

1. Explain the structure of a chromosome.
Refer Saras Science Pg No : 417 ; Q No : 7

2. Explain with an example the inheritance of dihybrid cross. How is it different from monohybrid cross?
Refer Saras Science Pg No : 418 ; Q No : 1

3. The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?
Refer Saras Science Pg No : 421 ; Q No : 3

4. How are chromosomes classified based on the position of centromere?

Refer Saras Science Pg No : 430 ; Q No : 3

5. Write short notes on idiogram.

Refer Saras Science Pg No : 433 ; Q No : 7

6. Explain Mendel's laws of heredity.

Refer Saras Science Pg No : 429 ; Q No : 2

## Part - IV 7 marks

1. How is the structure of DNA organised? What is the biological significance of DNA?

Refer Saras Science Pg No : 420 ; Q No : 2

2. (i) Flowers of the garden pea are bisexual and self-pollinated. Therefore, it is difficult to perform hybridization experiment by crossing a particular pistil with the specific pollen grains. How Mendel made it possible in his monohybrid and dihybrid crosses?

Refer Saras Science Pg No : 421 ; Q No : 1

(ii) Under which conditions does the law of independent assortment hold good and why?

Refer Saras Science Pg No : 422 ; Q No : 1

3. Write a note on DNA replication.

Refer Saras Science Pg No : 430 ; Q No : 4

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# Practicals

## Physics

### 1. Determination of weight of an object using the principle of moments

**Aim:**

To determine the weight of an object using the principle of moments.

**Apparatus required:**

A metre scale, a knife edge, slotted weights, thread

**Procedure:**

i. A metre scale is supported at its centre of gravity by a knife edge or suspended by using a thread tied to its centre so that the scale is in the horizontal position. Ensure that the scale is in equilibrium position.

ii. A known weight $W_2$ and an unknown weight $W_1$ are suspended from to either side of the the scale using the weight hangers.

iii. Fix the position of one weight hanger and adjust the position of the second weight hanger such that the scale is in equilibrium.

iv. Measure the distance $d_1$ and $d_2$ of the two weight hangers from the centre of the scale accurately.

v. The experiment is repeated for different positions of the unknown weight. Measure the distances. The reading are tabulated as follows:

**Observation:**

| S.No | Known weight in the weight hanger ($W_2$) kg | Distance of known weight $d_1$ (m) | Distance of unknown weight $d_2$ (m) | $W_2 \times d_2$ (kg m) | Unknown weight $W_1 = \frac{W_2 \times d_2}{d_1}$ (kg) |
|---|---|---|---|---|---|
| 1<br>2<br>3 | | | | | |

**Mean:**

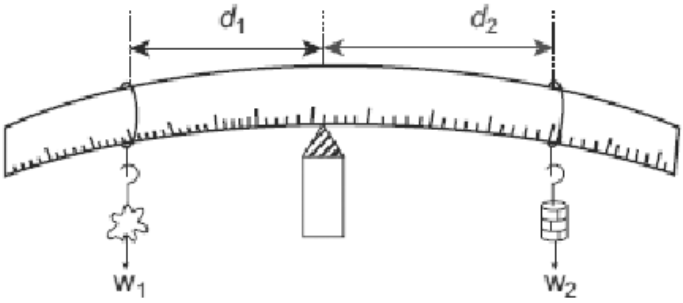
**Calculations:**

Moment of a force can be calculated using the formula

Moment of the force = Force x distance

Clock wise moment by unknown weight = $W_1 \times d_1$

Anticlockwise moment by known weight = $W_2 \times d_2$




$W_1 \times d_1 = W_2 \times d_2$

**Unknown weight** $\mathbf{W_1 = \frac{W_2 \times d_2}{d_1}}$

**Result:**

Using the principle of moments, the weight of the unknown body

$W_1$ = ------- Kg Wt.

# Chemistry

## 4. Identify the dissolution of the given salt whether it is Exothermic or Endothermic

**Aim:**

To test the dissolution of given salt is exothermic or endothermic

**Principle:**

If the reaction or process liberates the heat, then it is called exothermic.

If the reaction or process absorbs the heat, then it is called endothermic

**Apparatus required:**

Two beakers, Thermometer, stirrer, weighed amount of two samples.

**Procedure:**

Take 50ml of water in two beakers and label them as A and B. Note the temperature of the water from beaker A and B. Then, add 5g of sample A into the beaker A and stir well until it dissolve completely. Record final temperature of the solution. Now, repeat the same for the sample B. Record the observation.

**Observation:**

| S.No | Sample | Temperature before addition of sample (°C) | Temperature after addition of sample (°C) | Inference (temperature increases or decreases) |
|---|---|---|---|---|
| 1 | A | | | |
| 2 | B | | | |

**Result:**

From the inferences made

The dissolution of sample A is ---------- (Exothermic or endothermic)

The dissolution of sample B is -------- (Exothermic or endothermic)

**Note:**

Sodium hydroxide, ammonium nitrate, glucose, calcium oxide etc. may be given as the sample.

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# Bio-Botany

## 8. Photosynthesis-Test tube and funnel experiment (Demonstration)

Prove that oxygen is evolved during photosynthesis

### Aim

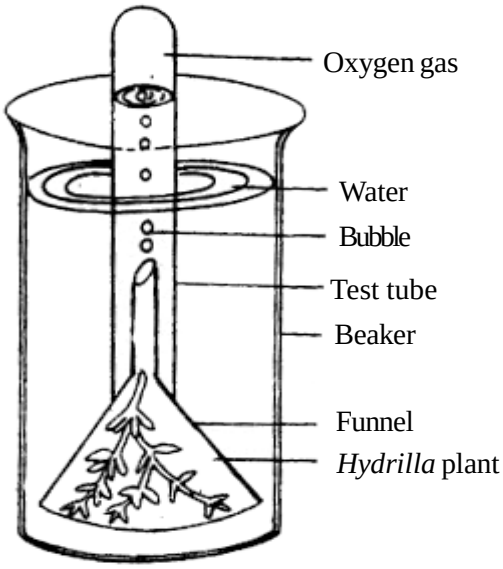
To prove that oxygen is evolved during photosynthesis.

### Materials Required

1.Test tube
2. Funnel
3. Beaker
4. Pond water
5. *Hydrilla* plant
6. Match box

### Procedure

1. Fill a beaker with pond water.




2. Place a few branches of *Hydrilla* plant inside the water.
3. Place a funnel inverted over the plant.
4. Fill a test tube with water.
5. Place it inverted over the stem of the funnel.
6. Keep the setup in sun light for few hours.

### Observation

1. The plant releases ***gas bubbles.***
2. Gas bubbles get collected at the top of the test tube.
3. Hence the water level decreases.
4. The test tube is carefully removed.
5. A burning stick is brought near the mouth of the test tube.
6. The flame increases.

### Result

1. It is proved that the gas released by the plant is ***oxygen.***
2. During photosynthesis oxygen is evolved as a by-product.

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# Bio Zoology

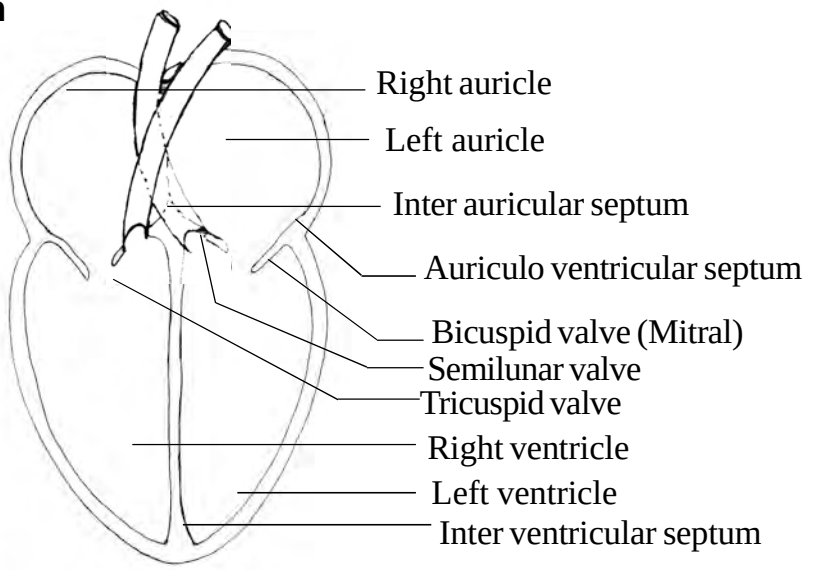
## 12 (a). Observation of model - Human heart

Identify the model, draw a labelled sketch and write the structure

### Identification

The given model is identified as ***L.S of Human Heart.***

### Labelled Sketch




### Structure

1. Human heart is a muscular ***pumping organ.***
2. It is made up of ***cardiac muscles.***
3. Covered by a ***pericardium.***
4. ***Four chambers*** - 2 auricles: Right auricle, Left auricle; 2 ventricles: Right ventricle, Left ventricle.
5. Auricles and ventricles are separated by ***auriculo-ventricular septum.***
6. Auricles are separated by ***inter auricular septum.***
7. Ventricles are separated by **interventricular septum.**
8. Apertures:
   1. Right auriculo ventricular aperture
   2. Left auriculo ventricular aperture
9. ***Valves:*** 1. Tricuspid valve
   2. Bicuspid valve-Mitral valve
   3. Semilunar valves.
10. The ventricle has
    *1. Papillary muscles*
    *2. Chordae tendineae*

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