

**St. Mary's School, Dwarka**  
**Holiday Homework**  
**Class XII**  
**Subject: Biology**

**Objectives:**

- To revise concepts.
- To develop skills to carry out research and develop scientific aptitude.
- To encourage learning through experience.

**Instructions: Please do the entire work in the notebook, scan it in a folder and mail.**

**Assignment 1: Reproduction**

Q1. Watch a movie on IVF/sperm donation with a critics' perspective and draw two strong messages which you would like to share as a biology student with childless couples.

Q2. Research about the female foeticide cases in Haryana. Record the number of cases in the last three year. Submit a report with the reasons which led to such an increase/decrease in numbers.

Q3. Find out about the location of at least two stem cell banks in Delhi. What is the role played by these banks in healthcare? How are the stem cells preserved?

Q4. May 20<sup>th</sup> is observed as World Bee Day. United Nation has declared "Save the Bees" theme which stresses the protection of Bees and other pollinators. What is the contribution or role of bees in plant reproduction?

Q5. Find out about an IVF centre in Delhi. Take an appointment with the doctor for a telephonic interview. Prepare at least ten questions for interaction with the expert regarding significance of IVF, success stories, challenges and the future ahead.

Q6. The global lock down due to the pandemic forced everyone to be indoors initially. A study has predicted, that due to unavailability of contraceptive devices/options there are chances of escalated birth rates. Suggest any other method which could have kept check on this situation.

Q7. Give a graphical representation of the uterine changes with respect to hormonal levels if the ovulation for a female happens on the 17th day of the menstrual cycle.

Q8. Prepare a blueprint to run a campaign on "Strategies of maintaining good reproductive health".

Q9. Surrogacy has been accepted as a hope to childless couples. Mention at least two situations wherein couples opt for surrogacy?

Q10. To promote good yield of crops, what are your suggestions to an agriculturist in terms of ecological parameters and breeding practices.

## **Assignment 2 : Ecology**

Q1 Present one case study related to poor yield of any crop due to compromised abiotic factors. Mention the link from which the study is extracted.

Q2. United Nations Environment Programme has declared “Biodiversity” the theme for World Environment Day 2020. Present any case study related to a campaign which is undertaken to conserve biodiversity in India.

Q3 Write a note on any one environmental campaign that you have participated in. What was the objective of the campaign? In which capacity did you participate and what was the outcome?

Q4 Organise a chat show amongst your classmates and discuss the impact of global warming to the yield of the crops.

Q5 Visit the site of “Youth for Climate India” and participate in any one activity which they announce every week.

Q6. Visit any site (online) working around biodiversity conservation. Comment on the modus operandi followed to conserve the species.

Q6 Read posts of the “World Economic Forum” on their official website regarding sustainable practices or measures taken up by various countries to keep a check on carbon emissions post lockdown. List atleast 5 countries and mention the measures taken in this area. Choose any one country which you think is being well planned and well prepared for any future environmental crisis. Justify your choice.

Q7. During our classes on Ecology, we had discussed the return of endangered turtles on the beaches of Goa. What do you think will be the effect post lock down when human activities will resume once again in the beaches? What measures should be taken to conserve biodiversity of the region?

Q8. Watch the movie ‘Planet of the Humans’ and write the summary of the same. How would you like the ending to be?

Q9. Delhi got its first urban mini forest which is set up in our school. The methodology followed was proposed by Akira Miyakawa of Japan to promote green spaces in cities. Read about the technique and enumerate the steps.

Q10. Water holding capacity of the soil plays a very important role in estimating productivity of autotrophs. Perform an experiment at home with roadside soil and garden soil to find out the percentage of water retention in each case.

## **Assignment 3: Genetics**

Q1. Read the book “Genome” by Matt Ridley (PDF shared). Share the thought behind the authors effort to present this scientific book for a layman

Q2 .How has Ridley introduced the concept of genome?

Q3. The cover of the book depicts 23 pair of chromosomes. On what basis has he arranged the chromosomes?

Q4. The book has 23 chapters based on 23 pairs of chromosomes, with a specific story. Which is your favourite chromosome and why?

Q5. Perform pedigree analysis taking any genetic condition in your family. Trace back the paternal and maternal family tree to understand the flow of genetic information from one generation to another.

Q6. Work out a monohybrid cross with any one character to deduce the phenotypic and genotypic ratio in F<sub>2</sub> generation.

Q7. Work out a dihybrid cross taking any two characters with any example and present the genotypic and phenotypic ratio in F<sub>2</sub> generation. Represent the same with help of Punnett square.

Q8. With the help of one example each, differentiate between genetic and chromosomal disorder.

Q9. Prepare a chart of your family to show their blood groups. Identify the gene /alleles responsible for it. Also explain the donor-recipient possibilities in each case.

Q10. Mendel proposed the concept of dominant and recessive traits in F<sub>1</sub> and F<sub>2</sub> generation without any blending. What was the exception to this rule as seen in Snapdragon and human blood groupings?

#### **Assignment 4: Human Health and Diseases**

Q1. Watch the movie “The Quiet Revolution”. What is your view on personal healthcare and general healthcare facilities in our country?

Q2. Read the book “Coma” by Robin Cook and write what Susan Wheeler feels for the two patients who slip into coma following malfunction procedure during administering anaesthesia. Consciousness is one of the characteristics of living human beings. What category do the patients in coma belong to?

Q3. The effect of deteriorating environment is directly related to the health of all age groups of human beings.

Q4. Conduct an interview with your family member who is suffering from a noncommunicable disease. Note down the symptoms and the protocol followed for treatment or management of the same.

Q5. What kind of health issues do you envisage post lock down amongst school kids and adults?

Q6. In Std 12, you have to present a mandatory project related to biology. Choose topic for the same. What are the steps you will follow to prepare a project report?

Q7. List at least 5 immunity boosters you can pick up from your kitchen. What is the difference between active and passive immunity?

Q8. Prepare a list of 5 health campaigns taken up by civil societies/NGOs in India. Mention the conditions/diseases which are dealt in these groups. What type of support is extended to the patients by these organisations?

Q9. Good nutrition, regular exercise and ample sleep are the requisites of good health. Share your good health practices. List the do's and the don'ts which you have incorporated in your daily routine for holistic wellbeing.

Q10. Beverages, sugary and fizzy drinks should be avoided. What effect do these drinks have on our health? What are the healthier options suggested by you?