# Dr. M.K.K. ARYA MODEL SCHOOL, MODEL TOWN, PANIPAT

**CLASS – XII**

**SUBJECT – BIOLOGY**

**HOLIDAYS HOMEWORK**

**CHAPTER 3 – HUMAN REPRODUCTION**

**ASSIGNMENT**

1. Draw a labeled diagrammatic view of human reproductive system.
2. Differentiate between vas deferens and vasa efferentia.
3. Name and explain the role of inner and middle walls of human uterus.
4. Draw a labeled diagram of reproductive system in a human female.
5. Draw a labeled diagrammatic sectional view of a human seminiferous tubule.
6. How many primary follicles are left in each ovary in a human female at puberty?
7. Draw a sectional view of the ovary showing the different follicular stages of a human female in her pre ovulatory phase of menstrual cycle.
8. Explain the events in a normal woman during her menstrual cycle on the following days
   a. Ovarian event from 13-15 days
   b. Ovarian hormones level from 16-23 days
   c. Uterine events from 24-29 days.
9. Explain the events in a normal woman during her menstrual cycle on the following days
   a. Pituitary hormone levels from 8-12 days
   b. Uterine events from 13-15 days
   c. Ovarian events from 16-23 days
10. Draw a labeled diagram of a human sperm.
11. Explain the hormonal control of spermatogenesis in humans.
12. Mention the target cells of luteinizing hormone in human males and females. Explain the effect and the changes which the hormone induces in each case.
13. Explain the development of an ovum from an oogonium in a human female.
14. A. Arrange the following hormones in the sequence of their secretion in a pregnant woman
    HCG, LH, FSH, Relaxin
    b. Mention their source and the function they perform.
15. why is follicular phase in the menstrual cycle also referred as proliferative phase? Explain.
16. Draw a graffian follicle and label antrum and secondary oocyte.
17. Explain the process of spermatogenesis in humans.
18. Specify the endocrine function of corpus luteum. How does it influence the uterus? Why is it essential?
19. Describe the process of parturition in human.
20. How is placenta formed in human female?
21. Name any two hormones which are secreted by placenta and are also present in a non- pregnant woman.
22. Briefly explain the events of fertilisation and implantation in an adult human female.
23. Name and draw a labelled sectional view of the embryonic stage that gets implanted.

**CHAPTER 4 – REPRODUCTIVE HEALTH**

**ASSIGNMENT**

1. List and four characteristics of an ideal contraceptive.
2. Name two intrauterine contraceptive devices that affect the motility of sperms.
3. Name two hormones that are constituents of contraceptive pills. Why do they have high and effective contraceptive value? Name a commonly prescribed non-steroidal oral pill.
4. If implementation of better techniques and new strategies are required to provide more efficient care and assistance to people. Then why is there a statutory ban on amniocentesis? Write the use of this technique and give reason to justify the ban.
5. Name any two copper releasing IUDs. Explain how they act as effective contraceptives in human females.
6. Name and explain the surgical method advised to human males and females as a mean of birth control. Mention its one advantage and one disadvantage.
7. How do implants act as an effective method of contraception in human females? Mention its one advantage over contraceptive pills.
8. Describe the lactational amenorrhoea method of birth control.
9. Name the STDs which can be transmitted through contaminated blood.
10. After a brief medical examination a healthy couple came to know that both of them are unable to produce functional gametes and should look for an 'ART'. Name the ART and the procedure involved that you can suggest to them to help them bear a child.
11. An infertile couple is advised to adopt test tube baby programme. Describe two principle procedures adopted for such technologies.
12. Explain the ZIFT. How is IUT different from it?
13. Give any two reasons for infertility among young couple.
14. Intra Cytoplasmic Sperm Injection and Gamete Intra Fallopian Transfer are two assisted reproductive technologies. How is one different from the other?
15. State any four methods to overcome infertility in human couples.
16. A couple where both husband and wife are producing functional gametes, but the wife is still unable to conceive, is seeking medical aid. Describe any one method that you can suggest to this couple to become happy parents.

**CHAPTER 5 – PRINCIPLES OF INHERITANCE AND VARIATION**

**ASSIGNMENT**

1. How would you find genotype of a tall pea plant bearing white flowers? Explain with the help of a cross. Name the type of cross you would use.
2. Although Mendel published his work on inheritance of characters in 1865 but for several reasons, it remained unrecognized till 1900. Why did it take so long?
3. Explain the laws that Mendel derived from his monohybrid crosses.
4. During a monohybrid cross involving a tall pea plant with a dwarf pea plant, the offspring populations were tall and dwarf in equal ratio. Work out a cross to show how it is possible.
5. Explain with the help of a suitable example the inheritance of a trait where two different dominant alleles of a trait express themselves simultaneously in the progeny. Name this kind of inheritance pattern.
6. Explain polygenic inheritance with the help of a suitable example.
7. Morgan carried out several dihybrid crosses in Drosophila and found F2 ratios deviated very significantly from the expected Mendelian ratio. Explain his finding with the help of an example.
8. Explain why a recessive allele is unable to express itself in a heterozygous state?
9. In pea plants, the colour of the flower is either violet or white, whereas human skin colour shows many gradation. Explain giving reasons how it is possible.
10. Explain the phenomena of multiple allelism and codominance taking ABO blood group as an example.

11. What is the phenotype of the following
    a. $I^Ai$ b. ii
12. A pea plant with purple flowers was crossed with white flowers producing all plants with only purple flowers. On selfing, these plants produced 482 plants with purple flowers and 162 with white flowers. What genetic mechanism accounts for these results? Explain.
13. Work out a cross between true breeding red and white flowered dog flower plants (Snapdragon) upto $F_2$ progeny. Explain the results of $F_1$ and $F_2$ generation.
14. In one family, each of the four children has a different blood group. Their mother is having group A and the father is having group B. Explain this pattern of inheritance with the help of a cross along with genotypes.
15. Who proposed chromosomal theory of inheritance? Point out any two similarities in the behavior of chromosomes and genes.
16. State and explain the law of independent assortment in a typical Mendelian dihybrid cross.
17. How are pleiotropy and Mendelian pattern of inheritance different from polygenic pattern of inheritance?
18. A couple with blood group A and B respectively have a child with blood group O. Work out a cross to show how it is possible and the probable blood groups that can be expected in their other off springs.
19. State and explain the law of segregation as proposed by Mendel in a monohybrid cross.
20. Write the Mendelian $F_2$ phenotypic ratio in dihybrid cross. State the law that he proposed on the basis of this ratio. How is this law different from the law of segregation?
21. Differentiate between olygenic inheritance and pleiotropy
22. Differentiate between dominance, codominance and incomplete dominance
23. During a medical investigation, an infant was found to possess an extra chromosome 21. Describe the symptoms the child is likely to develop later in the life.
24. Both haemophilia and thalassemia are blood related disorders in humans. Write their causes and the difference between the two. Name the category of genetic disorder they both come under.
25. Give the example of autosomal recessive trait in humans. Explain its pattern of inheritance with the help of a cross.
26. Name the kind of disease that are likely to occur in humans if
    a. Mutation in the gene that codes for an enzyme phenylalanine hydroxylase occurs.
    b. There is an extra copy of chromosome 21
    c. The karyotype is XXY
27. Which chromosome carries the mutant genes causing thalassemia in humans? What are the problems caused by these mutant genes?
28. Differentiate between ZZ and XY type of sex determination mechanism.
29. Name the phenomenon that leads to situations like XO abnormality in humans. How do humans with XO abnormality suffer? Explain.
30. Sickle cell anaemia in humans is a result of point mutation. Explain.
31. Write the genotypes of both the parents who have produced a sickle celled anaemic offspring.
32. Name a disorder, give the karyotype and write the symptoms where a human male suffers as a result of an additional X chromosome.
33. Why are grasshopper and Drosophila said to show male heterogamety? Explain.
34. Explain female heterogamety with the help of an example.
35. Why are thalassemia and colour blindness categorized as Mendelian disorders? Write the symptoms of these diseases. Explain their pattern of inheritance in humans.
36. About 8% of human male population suffers from colour blindness whereas only about 0.4% of human female population suffers from this disease. Write an explanation to show how it is possible.
37. How does a chromosomal disorder differ from a Mendelian disorder?
38. Name any two chromosomal aberration associated disorders.