VIDYASGAR SCHOOL INDORE

SUMMER ASSIGNMENT 2026-27

CLASS- XII SUBJECT- BIOLOGY (044)

PROJECT- BIOLOGY (ANY ONE)-

1.Study of drug resistance in bacteria using antibiotics.

2. Analysis of presence of carbohydrate, protein, starch, fats in food material.

3. Protein synthesis (along with structure of T RNA and ribosome model).

4. Semiconservative mode of DNA replication (along with 3 D model)

5. Adulterants and their testing in food sample.

6. Effect of diet on blood glucose level in different age groups.

7. Effect of temperature and pH on seed germination.

8. Mycofoam (making of ecofriendly packaging material using fungi and farm waste) .

9. Moringa: House of nutrition

10. Importance of vitamin B12 in human body(deficiency, diseases, sources(food), physiological role).

11. Insulin resistance in humans. (role of insulin in metabolism, insulin produced by rDNA technology) .

12. Recombinant bio technology: process and applications (3D model also).

Assignment- Chapter-1 (to be solve in classwork note book)

1. Name the parts of an angiosperm flower in which development of male and female gametophyte take place.

2. Differentiate between microsporogenesis and megasporogenesis. Which type of cell division occurs during these events? Name the structures formed at the end of these two events.

3. Arrange the following terms in the correct developmental sequence: Pollen grain, sporogenous tissue, microspore tetrad, pollen mother cell, male gametes.

4. With a neat, labelled diagram, describe the parts of a typical angiosperm ovule. 5. What is meant by monosporic development of female gametophyte?

6. With a neat diagram explain the 7-celled, 8-nucleate nature of the female gametophyte.

7. What are chasmogamous flowers? Can cross-pollination occur in cleistogamous flowers? Give reasons for your answer.

8. Mention two strategies evolved to prevent self-pollination in flowers.

9. What is self-incompatibility? Why does self-pollination not lead to seed formation in self-incompatible species?

10. What is bagging technique? How is it useful in a plant breeding programme?

11. What is triple fusion? Where and how does it take place? Name the nuclei involved in triple fusion.

12. Why do you think the zygote is dormant for sometime in a fertilised ovule?

13. Differentiate between: (a) hypocotyl and epicotyl; (b) coleoptile and coleorrhiza; (c) integument and testa; (d) perisperm and pericarp.

14. Why is apple called a false fruit? Which part(s) of the flower forms the fruit?

15. What is meant by emasculation? When and why does a plant breeder employ this technique?

16. If one can induce parthenocarpy through the application of growth substances, which fruits would you select to induce parthenocarpy and why?

17. Explain the role of tapetum in the formation of pollen-grain wall.

18. What is apomixis and what is its importance?

Chapter-2

1. Draw a labelled diagram of male reproductive system.

2. Draw a labelled diagram of female reproductive system.

3. Write two major functions each of testis and ovary.

4. Describe the structure of a seminiferous tubule.

6. What is spermatogenesis? Briefly describe the process of spermatogenesis.

7. Name the hormones involved in regulation of spermatogenesis.

8. Define spermiogenesis and spermiation.

9. Draw a labelled diagram of sperm.

10. What are the major components of seminal plasma?

11. What are the major functions of male accessory ducts and glands?

12. What is oogenesis? Give a brief account of oogenesis.

13. Draw a labelled diagram of a section through ovary.

14. Draw a labelled diagram of a Graafian follicle?

15. Name the functions of the following: (a) Corpus luteum (b) Endometrium (c) Acrosome (d) Sperm tail (e) Fimbriae

16. Identify True/False statements. Correct each false statement to make it true. (a) Androgens are produced by Sertoli cells. (True/False) (b) Spermatozoa get nutrition from Sertoli cells. (True/False) (c) Leydig cells are found in ovary. (True/False) (d) Leydig cells synthesise androgens. (True/False) (e) Oogenesis takes place in corpus luteum. (True/False) (f) Menstrual cycle ceases during pregnancy. (True/False) (g) Presence or absence of hymen is not a reliable indicator of virginity or sexual experience. (True/False)

17. What is menstrual cycle? Which hormones regulate menstrual cycle?

18. What is parturition? Which hormones are involved in induction of parturition?

19. In our society the women are often blamed for giving birth to daughters. Can you explain why this is not correct?

20. How many eggs are released by a human ovary in a month? How many eggs do you think would have been released if the mother gave birth to identical twins? Would your answer change if the twins born were fraternal?

21. How many eggs do you think were released by the ovary of a female dog which gave birth to 6 puppies?

Chapter-3

1. What do you think is the significance of reproductive health in a society?

2. Suggest the aspects of reproductive health which need to be given special attention in the present scenario.

3. Is sex education necessary in schools? Why?

4. Do you think that reproductive health in our country has improved in the past 50 years? If yes, mention some such areas of improvement.

5. What are the suggested reasons for population explosion?

6. Is the use of contraceptives justified? Give reasons.

7. Removal of gonads cannot be considered as a contraceptive option. Why?

8. Amniocentesis for sex determination is banned in our country. Is this ban necessary? Comment.

9. Suggest some methods to assist infertile couples to have children.

10. What are the measures one has to take to prevent from contracting STDs?

11. State True/False with explanation (a) Abortions could happen spontaneously too. (True/False) (b) Infertility is defined as the inability to produce a viable offspring and is always due to abnormalities/defects in the female partner. (True/False) (c) Complete lactation could help as a natural method of contraception. (True/False) (d) Creating awareness about sex related aspects is an effective method to improve reproductive health of the people. (True/False)

12. Correct the following statements: (a) Surgical methods of contraception prevent gamete formation. (b) All sexually transmitted diseases are completely curable. (c) Oral pills are very popular contraceptives among the rural women. (d) In E. T. techniques, embryos are always transferred into the uterus.

Assignment- Practical (to be done in practical file)

Study and observe the following (Spotting):

1. Flowers adapted to pollination by different agencies (wind, insects, birds).

2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.

3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).

4. Meiosis in onion bud cell or grasshopper testis through permanent slides.

5. T.S. of blastula through permanent slides (Mammalian).

6. Mendelian inheritance using seeds of different colour/sizes of any plant.

7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.

8. Controlled pollination - emasculation, tagging and bagging.

9. Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.

10. Models specimens showing symbiotic association in lichens, root nodules of leguminous plants, and parasitic mode of nutrition shown by Cuscuta on host.

11. Flash cards / models showing examples of homologous and analogous organs.

Slide Preparation- (I) Prepare a temporary mount to observe pollen germination.

(II). Prepare a temporary mount of onion root tip to study mitosis.

Mionr Experiment- (I) Study the plant population density by quadrat method.

(II) Study the plant population frequency by quadrat method.

Major experiment- Isolate DNA from available plant material such as spinach, green pea seeds, papaya, banana etc.
