No. of Printed Pages/Questions: 04/24

O. P. JINDAL SCHOOL, SAVITRI NAGAR

Half Yearly Examination (2026– 2027)

Class: XII **MM: 50**

Subject: Biology (044) **Time: 2Hrs**

General Instructions:

(i) All questions are compulsory.

(ii) Section A has 12 questions of 1 mark each, Section B has 4 questions of 2 marks each, Section C has 4 questions of 3 marks each, Section D has 2 case –based questions of 4 marks each; and Section E has 2 questions of 5 marks each.

(iii) There is no overall choice. However, internal choices have been provided in some questions.

(iv) Where ever necessary, neat and properly labelled diagrams should be drawn.

SECTION-A

Q1. The male gametophyte in angiosperms is

(a)ovule (b)pollen grain

(c) Ovary (d) Embryo sac

Q2. The genotype of a heterozygous individual is:

(a) TT (b) tt

(c) Tt (d) XX

Q3. Which antibody is mainly responsible for the secondary immune response?

(a) IgA (b) IgE

(c) IgG (d) IgM

Q4. Double fertilisation is characteristic of:

(a) Gymnosperms (b) Bryophytes

(c) Angiosperms (d) Pteridophytes

Q5. Which microorganism is known as Baker's Yeast ?

(a) Lactobacillus (b) Saccharomyces cerevisiae

(c) Rhizobium (d) Penicillium

Q6. Transfer of pollen from anther to stigma of the same flower is called:

(a) Xenogamy (b) Geitonogamy

(c) Autogamy (d) Cross-pollination

Q7.I f a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is

(a) autosomal dominant (b) autosomal recessive

(c) sex-linked dominant (d) sex-linked recessive.

Q8. The characters which appear in the first filial generation are called

(a) recessive characters (b) dominant characters

(c) holandric characters (d) lethal characters

Direction (Q.No.9-12) Assertion –Reasoning type questions. Mark the correct answer as

(a)Both A and R are true, and R is the correct explanation of A.

(b) Both A and R are true, but R is not the correct explanation of A.

(c) A is true, but R is false.

(d) A is false, but R is true.

Q9.Assertion (A): Cross of F1 individual with recessive homozygous parent is test cross.
Reason (R): No recessive individual are obtained in the monohybrid test cross .

Q10.Assertion (A): There is no chance of malaria to a man on the bite of male Anopheles mosquito

Reason(R): It carries a non-virulent strain of Plasmodium.

Q11Assertion: Apomixis is an asexual mode of reproduction.

Reason (R): It involves the fusion of gametes.

Q12. Assertion: Contraceptives are methods to prevent unwanted pregnancies.

Reason: Unwanted pregnancies can only be prevented by using oral contraceptive.

SECTION-B

Q13. Spermatogenesis in human males is a hormone regulated process. Justify.

Q14. A child has blood group O. If the father has blood group A and mother of blood group B, work out the genotypes of the parents and the possible genotypes of the other off springs.

Q15. Bottled fruit juices are clearer as compared to those made at home. Explain.

Q16. Name any two types of .cells that act as 'cellular barriers' to provide innate immunity in humans.

SECTION-C

Q17: Explain Typhoid. List out its symptoms, causes, treatment and how it can be prevented.

Q18. In Antirrhinum majus a plant with red flowers was crossed with a plant with white flowers. Work out all the possible genotypes and phenotypes of F1and F2 generations, comment on the pattern of inheritance in this case?

Q19. What are outbreeding devices? Mention any four strategies developed by flowering plants to prevent self-pollination.

Q20 . Explain the development of human embryo with diagram.

SECTION-D

Question No. 21 and 22 are case based questions.

Q21 . During a clinical screening of newborn infants in a hospital, a medical team identifies two infants with different congenital anomalies. Infant A exhibits a short stature, a round head, a furrowed tongue, a partially open mouth, and a broad palm with a characteristic crease. Infant B is a male who shows overall masculine development but also possesses feminine characteristics such as gynecomastia (breast development) and is diagnosed as sterile.

(i)Identify the chromosomal disorders affecting Infant A and Infant B.

(ii) State the specific chromosomal cause (karyotype designation) for both disorders.

(iii)What is the technical biological term used for the failure of chromatids to segregate during cell division, which leads to such chromosomal gains or losses?

Q22. A 45-year-old chronic kidney patient underwent a renal transplantation surgery. Despite careful blood group matching and initial tissue typing, the patient's body began to reject the new organ a few weeks post-surgery. The doctors immediately administered specific immunosuppressive drugs like Cyclosporin A to check the response of certain lymphocytes.

(i) Which specific branch of the immune system is primarily responsible for the rejection of grafted organs?

(ii)How does the body distinguish between its own tissues and the transplanted organ?

(iii)Why are breast-fed newborns considered to have a superior defense system compared to completely formula-fed babies?

(iv)Where do T-lymphocytes originate, and where do they mature?

SECTION-E

Q.23.(a) How many primary follicles are left in each ovary in a human female at puberty?

(b) Draw a sectional view of the ovary showing the different follicular stages of a human female in her pre ovulatory phase of menstrual cycle.

(c) What are Leydig cells ? Mention their location and function.

OR

(a) Describe the structure of a typical angiospermic ovule with labelled diagram.

(b) What is Monosporic development of female gametophyte?

Q24. 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.

OR

Name a blood related autosomal Mendelian disorder. Why is it called Mendelian disorder? How is the disorder transmitted from parents to offspring? .

****