THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

AIM HIGH, TOGETHER WE FLY

Biology (044)

FIRST TERMINAL EXAMINATION

GRADE XII - 2024-25 Time: 3 Hours

Date:04/09/2025 Max. Marks: 70

General Instructions:
1.All questions are compulsory.
2.The question paper has five sections and 33 questions. All questions are compulsory.
3.Section—A has 16 questions of 1 mark each; Section—B has 5 questions of 2 marks each; Section—C has 7 questions of 3 marks each: Section—D has 2 case-based questions of 4 marks each; and Section—E has 3 questions of 5 marks each.
4.There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
5.Wherever necessary, neat and properly labelled diagrams should be drawn.

Qn. No		Mark
	SECTION A	
1	Feathery stigma occurs in (a) pea (b) wheat (c) Datura (d) Caesalpinia	1
2	The substance produced by a cell in viral infection that can protect other ells from further infection is (a) serotonin (b) colostrum (c) interferon (d) histamine.	1
3	Which of the following approaches does not give the defined action of contraceptive? (a)Hormonal contraceptives - Prevent/retard entry of sperms, prevent ovulation and fertilisation (b)Vasectomy - Prevents spermatogenesis (c)Barrier methods - Prevent physical meeting of ovum and sperms	1

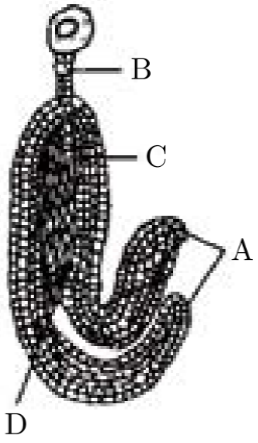
	(d)Intrauterine devices - Increase phagocytosis of sperms, suppress sperm motility and fertilising capacity of sperms	
4	Which among the following has 23 chromosomes ? (a) Spermatogonia (b) Zygote (c) Secondary oocyte (d) Oogonia	1
5	The law of segregation of characters postulated by Mendel can be related to (a) the presence of two genes for each character in a somatic cell. (b) presence of both genes on the same chromosome. (c) a gamete receiving only one of the two homologous chromosomes during gamete formation. (d) None of the above	1
6	Which of the following will not result in variations among siblings ? (a) Independent assortment of genes (b) Crossing over (c) Linkage (d) Mutation	1
7	Egg apparatus consists of (a) egg cell and two synergids. (b) egg cell and central cell. (c) egg cell and antipodal cells. (d) egg cell and one synergid.	1
8	Which of the following is not a water pollinated plant ? (a) Zostera (b) Vallisneria (c) Hydrilla (d) Cannabis	1
9	Acrosomal reaction of the sperm occurs due to (a) its contact with zona pellucida of the ova (b) reactions within the uterine environment of the female (c) reactions within the epididymal environment of the male (d) androgens produced in the uterus.	1
10	Which of the following hormones is not secreted by human placenta ? (a) hCG (c) Progesterone	1

	(b) Estrogens (d) LH	
11	A cross was made between two plants. The resultant off springs carries 50% dominant phenotypic character (T) and 50% recessive phenotypic character (t). What would be the genotype of parents? (a) Tt X Tt (b) Tt X tt (c) TT X Tt (d) TT X tt	1
12	During microsporogenesis, meiosis occurs in (a) endothecium (b) microspore mother cells (c) microspore tetrads (d) pollen grains	1
DIRECTION:Q. No. 13-16: Consist of two statements— Assertion (A) and Reason (R).Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true and R is not the correct explanation of A. (c) A and R are false. (d) A is False but R is true.		
13	Assertion: Hydrophily is a major mode of pollination in most of the aquatic plants in angiosperms. Reason: Almost all the aquatic dicot and monocot plants require water for the transport of male gametes and for fertilisation.	1
14	Assertion: A test cross is used to determine the phenotype of an organism. Reason: F2 generation of a monohybrid test cross produces one or two phenotypes depending upon the genotype of the unknown organism.	1

15	Assertion: Artificial insemination is the method of introduction of semen inside the female. Reason: This technique is used in those cases where males have low sperm count.	1
16	Assertion: The endometrium undergoes cyclical changes during menstrual cycle. Reason: The myometrium exhibits strong contractions during delivery of baby.	1
	Section—B	
17	How do cellular barriers and cytokine barriers provide innate immunity?	2
18	What do you mean by foetal ejection reflex?	2
19	Why is the process of fertilisation in a flowering plant referred to as double fertilisation?	2
20	What does secondary productivity in an ecosystem indicate? List any two factors by which productivity is limited in aquatic systems.	2
21	What is codominance? State one example in human	2
	Section—C	
22	(a) State the cause and symptoms of Down's syndrome. Name and explain the event responsible for causing this syndrome. (b) Haemophilia and Thalassemia are both examples of Mendelian disorder, but show differences in their inheritance pattern. Explain how.	3
23	Medically it is advised to all young mothers that breastfeeding is the best for their newborn babies. Do you agree? Give reasons in support of your answer.	3
24	(a)Cancer is one of the most dreaded diseases. Explain 'Contact inhibition' and 'Metastasis' with respect to the disease. (b) Name the group of genes that have been identified in normal cells that could lead to cancer. How do these genes cause cancer?	3

25	Name the organic materials exine and intine of an angiosperm pollen grains are made up of. Explain the role of exine.	3
26	Explain the zygote intrafallopian transfer technique (ZIFT). How is intrauterine transfer technique (IUT) different from it?	3
27	Describe the post-zygotic events leading to implantation and placenta formation in humans. Mention any two functions of placenta.	3
28	A haemophilic father can never pass the gene for haemophilia to his son. Explain.	3
	Section—D	
29	Question 1:Read the following and answer any four questions from (i) to (iv) given below:Events of Menstrual Cycle:The major events of the menstrual cycle are as follows as the cycle starts with the menstrual phase, when menstrual flow occurs and it lasts for 3-5 days. The menstrual flow results due to breakdown of the endometrial lining of the uterus and its blood vessels which forms liquid that comes out through vagina. Menstruation only occurs if the released ovum is not fertilised. Lack of menstruation may be indicative of pregnancy. However, it may also be caused due to some other underlying causes like stress, poor health etc. The menstrual phase is followed by the follicular phase.During this phase, the primary follicles in the ovary grow to become a fully mature Graafian follicle and simultaneously the endometrium of uterus regenerates through proliferation. These changes in the ovary and the uterus are induced by changes in the levels of pituitary and ovarian hormones. The secretion of gonadotropins (LH and FSH) increases gradually during the follicular phase, and stimulates follicular development as well as secretion of estrogens by the growing follicles. Both LH and FSH attain a peak level in the middle of cycle (about 14th day). Rapid secretion of LH leading to its maximum level during the mid-cycle called LH surge induces rupture of Graafian follicle and thereby the release of ovum (ovulation). The ovulation (ovulatory phase) is followed by the luteal phase during which the remaining parts of the Graafian follicle transform as the corpus luteum.The corpus luteum secretes large amounts of progesterone which is essential for maintenance of the endometrium.Such an endometrium is necessary for implantation of the fertilised ovum and other events of pregnancy. During pregnancy, all events of the menstrual cycle stop and there is no menstruation. In the absence of fertilisation, the corpus luteum degenerates. This causes disintegration of the endometrium leading to menstruation, marking a new cycle. In human beings, menstrual cycles cease around 50 years of age; that is termed as menopause. Cyclic menstruation is an indicator of normal reproductive phase and extends between menarche and menopause.	4

	(i) What causes menstrual flow? (ii) Why is the secretory phase also known as luteal phase? (iii) What happens if LH secretes rapidly? (iv) Which of the hormones has no role in menstruation?	
30	Read the following and answer the questions from (i) to (iv) given below: Sickle cell anemia is a genetic disorder where the body produces an abnormal hemoglobin called 36 hemoglobin S. Red blood cells are normally flexible and round, but when the hemoglobin is defective, blood cells take on a "sickle" or crescent shape. Sickle cell anemia is caused by mutations in a gene called HBB. It is an inherited blood disorder that occurs if both the maternal and paternal copies of the HBB gene are defective. In other words, if an individual receives just one copy of the defective HBB gene, either from mother or father, then the individual has no sickle cell anaemia but has what is called "sickle cell trait". People with sickle cell trait usually do not have any symptoms or problems but they can pass the mutated gene onto their children. There are three inheritance scenarios that can lead to a child having sickle cell anaemia: - Both parents have sickle cell trait - One parent has sickle cell anaemia and the other has sickle cell trait Both parents have sickle cell anaemia (i) Sickle cell anaemia is a/an disease. (a) X linked (b)Autosomal dominant (c) Autosomal recessive (d) Y linked (ii) If both parents have sickle cell trait, then there is the child having sickle cell anaemia. (a) 25 % risk (b)50 % risk (c) 75% risk (d) No risk (iii) If both parents have sickle cell trait, then there is_____of the child having sickle cell trait. (a) 25 % risk (b)50 % risk (c)75% risk (d) No risk	4

	(iv) If one parent has sickle cell anaemia and the other has sickle cell trait, there is _____ their children will have sickle cell anaemia and will have sickle cell trait. (a) 25 % risk, 75% risk (b)50 % risk, 50% risk (c) 75% risk, 25% risk (d)No risk	
	Section—E	
31	(a)Explain the role of the following in providing defence against infection in the human body (i) Histamines (ii) Interferons (iii) B-cells. (b)Name the explain the two types of immune responses in humans. (c)Differentiate between active immunity and passive immunity. Give any one example for passive immunity	5
32	 (a) Identify the given figure and its labelled parts A, B, C and D. (b) Explain the development of the given above structure from the embryo sac of dicot flower. Or b) i) Why are zygotes dominant for sometime in the fertilised ovule? ii) What is polyembryony? Give an example. iii) In fruits, what is formed from following parts:- a) Ovary wall b) Outer integument c) Inner integument d) zygote e) Primary endosperm f) Ovary g) Nucellus	5
33	What do you mean by reproductive health? Mention the different way in which people are made aware of the significance of reproductive healthy society. Or	5

	a)Suggest some methods to assist infertile couples to have children? b)Suggest the aspects of reproductive health which need to be given special attention in the present scenario.	