

KENDRIYA VIDYALAYA SANGATHAN DELHI REGION**Pre-Board- I Examination - 2025-26****CLASS - XII****Subject - Biology (044)****M.M. - 70****Time - 3 hours****General Instructions:**

1. All questions are compulsory.
2. The question paper has five sections and 33 questions.
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 5marks each.
4. There is no overall choice. Answer all 33 questions. 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.

SECTION – A

Q. No. 1 to 12 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.

Q. No.	Question	Marks
1	In human beings _____ undergoes meiosis II, select the option that fills the blank correctly A. Primary spermatocyte B. Secondary oocyte C. Second polar body D. Primary oocyte	1
2	Which of the following set of information is correct regarding ploidy level of nucellus, megaspore mother cell ,functional megaspore and female gametophyte respectively A. $2n, n, n, 2n$ B. $2n, 2n, n, 2n$ C. $2n, 2n, n, n$ D. $n, 2n, 2n, n$	1

3	Listed below are all venereal diseases except A. Genital herpes B. Filariasis C. Trichomoniasis D. syphilis	1
4	Semiconservative DNA replication was proved by Meselson and Stahl in which DNA was made: A. Radioactive using nitrogen ^{15}N B. Heavy using ^{14}N C. Heavy using $^{15}\text{NH}_4\text{Cl}$ D. Radioactive using $^{14}\text{NH}_4\text{Cl}$	1
5	Which of the following acts as substrate as well as provide energy for DNA polymerisation A. Ribo nucleoside B. Deoxyribo nucleoside C. Ribo nucleotide D. Deoxyribo nucleoside tri phosphate	1
6	Which of the following is an example for link species A. Lobefins B. Dodo bird C. Sea weed D. Chimpanzee	1
7	Consider if a man whose mother was haemophilic marries a woman whose father was also haemophilic but mother was absolutely normal calculate what percentage of their male progeny will be haemophilic? A. 0% B. 25% C. 50% D. 75%	1
8	"It is a stochastic process based on chance events in nature and chance mutation in the organisms." This statement tells us about A. Non directional nature of evolution B. Directional mutations leading to natural selection C. Lack of anthropogenic impact on the evolutionary Time scale D. Constant rate of reproduction and evolution in all organisms	1
9	Mucus coating of epithelium lining the respiratory and gastro intestinal tract is an example of A. Cellular barrier B. Physiological barrier C. Cytokine barrier D. Physical barrier	1

10	<p>Against the codon 5' UAC 3', what would be the sequence of anticodon on tRNA?</p> <p>A. 3' GUA 5'</p> <p>B. 3' AUG 5'</p> <p>C. 5' ATG 3'</p> <p>D. 5' GTA 3'</p>	1
11	<p>Isolation of genetic material from fungal cells involves the use of</p> <p>A. Lysozyme</p> <p>B. Cellulase</p> <p>C. Chitinase</p> <p>D. Polymerase</p>	1
12	<p>Viruses belonging to genus <i>Nucleopolyhedrovirus</i> are the important component of IPM because</p> <p>A. They are wide spectrum bioinsecticides</p> <p>B. They conserve beneficial insects being a species specific insecticide</p> <p>C. They have side effects on plants and animals</p> <p>D. They are not species specific</p>	1
	<p>Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>A. Both A and R are true and R is the correct explanation of A.</p> <p>B. Both A and R are true and R is not the correct explanation of A.</p> <p>C. A is true but R is false.</p> <p>D. A is False but R is true.</p>	
13	<p>Assertion (A): In papaya, both autogamy and geitonogamy are absent.</p> <p>Reason (R): Papaya is a dioecious plant</p>	1
14	<p>Assertion (A): According to Darwin, fitness refers ultimately and only to reproductive fitness.</p> <p>Reason (R): Living organisms who fit better in an environment leave more progeny behind.</p>	1
15	<p>Assertion (A): Morphine is very useful in patients undergoing surgery.</p> <p>Reason (R): It is a very effective sedative and pain killer.</p>	1
16	<p>Assertion (A): Transgenic animals are used for chemical safety testing.</p> <p>Reason (R): Transgenic animals are made to carry genes which make them more resistant to toxic substances than non-transgenic animals</p>	1
	SECTION – B	

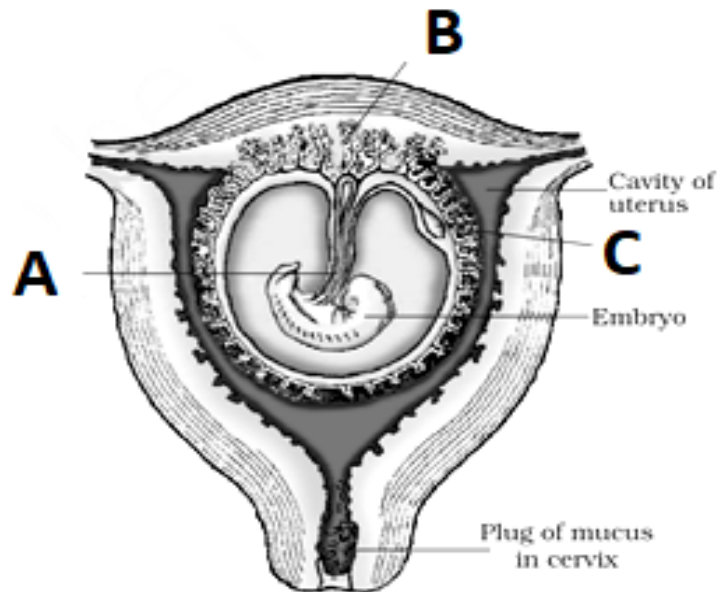
17	<p><u>Attempt either A or B:</u></p> <p>A. What would be the genetic nature of apomictic embryos? Can they be called clones?</p> <p style="text-align: center;">OR</p> <p>B. If you squeeze a seed of orange you might observe many embryos of different sizes. How is it possible? Explain.</p>	2
18	If the length of E. coli DNA is 1.36 mm, can you calculate the number of base pairs in E. coli?	2
19	<p>A person's immune system is suppressed, and ELISA test, gives positive indication of a pathogen.</p> <p>(a) Name the disease the patient is suffering from.</p> <p>(b) What is the causative organism?</p> <p>(c) Which cells of the body are affected by the pathogen?</p>	2
20	<p><u>Attempt either A or B:</u></p> <p>A. Explain any two methods of vectorless gene transfer.</p> <p style="text-align: center;">OR</p> <p>B. What does 'Competent' refer to in competent cells used in transformation?</p>	2
21	<p><u>Attempt either A or B:</u></p> <p>A. Give the trophic level for the following:</p> <p>(a) Dinesh eating Dal and Chapatti</p> <p>(b) Cat eating on mice which feeds on grains</p> <p>(c) Lion eating on Deer</p> <p>(d) Blue green algae using sunlight</p> <p style="text-align: center;">OR</p> <p>B. Write the different steps taken in humification and mineralization during the process of decomposition.</p>	2
	SECTION – C	
22	One of the major approaches of crop improvement program is Artificial Hybridisation. Explain the steps involved in making sure that only desired pollen grain pollinate the stigma of a bisexual flower by a plant breeder.	3
23	Explain how 'sticky ends' are obtained in a DNA segment. Write their importance in DNA technology.	3

24

Given below is the diagram of the human foetus within the uterus.

- Identify the structures labeled as A and C.
- What will happen if A doesn't develop?
- Identify B and its function.

3



For visually impaired students:-

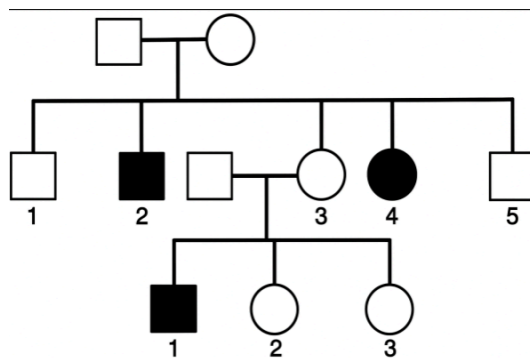
Explain one application of each one of the following:-

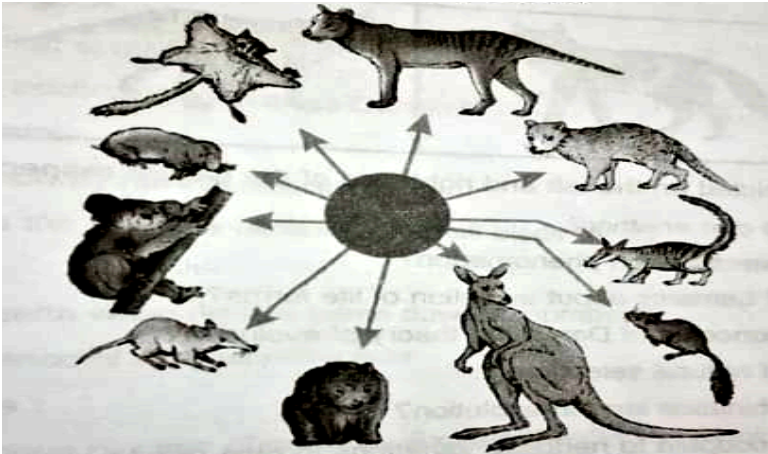
- Amniocentesis
- Lactational amenorrhea
- ZIFT

25

Study the given pedigree chart and answer the questions that follow:

3



	<p>(a) Trait is autosomal recessive (True/False). What could the disease be?</p> <p>(b) Give the genotype of the members 3 and 4 of second generation.</p>	
26	<p>Study the figure given below and answer the following questions:</p>  <p>i. Which animals are depicted in the given figure?</p> <p>ii. What phenomenon they are representing?</p> <p>iii. How can you say that these are the result of that phenomenon?</p> <p><u>For visually impaired students:-</u></p> <p>i. Write two differences between <i>Homo erectus</i> and <i>Homo habilis</i>.</p> <p>ii. Rearrange the following from early to late geologic periods: Carboniferous, Silurian, Jurassic</p>	3
27	<p>Treatment of wastewater is done in a sewage treatment plant to make it less polluting. Explain the following with reference to this treatment process:</p> <p>(a) Primary sludge</p> <p>(b) Activated sludge</p> <p>(c) Anaerobic sludge digesters</p>	3

28	<p>Observe the graph given below:</p> <p>The graph represents inter-specific interaction between two species of <i>Paramecia</i> competing for the same resource in a culture medium. <i>Paramecium caudatum</i> and <i>Paramecium aurelia</i> were grown in separate cultures as well as in mixed cultures. It was found that each species grew in numbers according to the logistic equation.</p> <ol style="list-style-type: none"> Which species is competitively superior? Support it with the data provided in the graph. State the underlying principle for the above result and name the scientist associated with this principle. Explain the mechanism in which two or more species competing with each other can co-exist. <p><u>For visually impaired students:</u></p> <ol style="list-style-type: none"> What is the primary productivity of an ecosystem and how is it expressed? Explain what does the equation given below show: $GPP - R = NPP$ 	3
	SECTION – D	
29	<p>Read the following and answer the questions given below:</p> <p>Shreya went with her mother and younger brother to the garden for a walk and was pleasantly surprised to see many flowers of different hues and fragrances. Her brother kept asking questions as to why there were so many bees and butterflies on the flowers. Why were only flowers coloured and not leaves? Why do gardeners allow these insects to be there in the vicinity of plants? Whereas near the silk-cotton tree there were no insects, but only birds? Shreya answered such queries from her little brother by following explanation:</p>	4

	<p>Shreya had to explain him the relationship between the two. Flowers bear the reproductive organs and need external help for carrying the male gametes, which these insects carry out for the plants.</p> <p>In return, plants reward them by giving nectar. So it is a mutually beneficial relationship. Flowers are bright and showy to attract these pollinators whereas leaves have to perform photosynthesis.</p> <p>Gardeners allow these insects to be near plants because pollination will help in seed formation. The silk-cotton tree is pollinated by birds, hence more birds are there.</p> <p>(a) How does cleistogamy ensure autogamy?</p> <p>(b) State one advantage and one disadvantage of cleistogamy to the plant.</p> <p>Attempt either subpart c or d.</p> <p>(c) List any two characteristic features of wheat flowers that make it a good example of wind pollination.</p> <p>OR</p> <p>(d) It is observed that plant breeders carrying out wheat hybridisation often take pollen grains from the 'pollen banks'. Do you agree? Give one reason in support of your answer.</p>	
30	<p>Read the following passage and answer the questions that follow:</p> <p>"Mosquitoes are drastically affecting the human health in almost all the developing tropical countries. Different species of mosquitoes cause very fatal diseases so much so that many humans lose their life and if they survive, are unable to put in productive hours to sustain their life. With the result the health index of the country goes down."</p> <p>(a) Name the form in which <i>Plasmodium</i> gains entry into (i) human body, (ii) the female <i>Anopheles</i> body.</p> <p>(b) Name a species of mosquito other than female <i>Anopheles</i> and the disease, for which it carries the pathogen.</p> <p>Attempt either subpart c or d.</p> <p>(c) Why do the symptoms of malaria not appear in a person immediately after being bitten by an infected female <i>Anopheles</i>? Give one reason. Explain when and how do the symptoms of the disease appear.</p> <p>OR</p> <p>(d) Explain the events which occur within a female <i>Anopheles</i> mosquito after it has sucked blood from a malaria patient.</p>	4

	SECTION – E	
31	<p><u>Attempt either A or B:</u></p> <p>A. (a) Explain what DNA replication refers to. (b) State the properties of DNA replication model. (c) List the enzymes involved in the process along with their functions.</p> <p>OR</p> <p>B. (a) Write the specific features of the genetic codon AUG. (b) Genetic codes can be universal and degenerate. Write about them, giving one example of each. (c) Explain aminoacylation of tRNA.</p>	5
32	<p><u>Attempt either A or B:</u></p> <p>A. (a) Name the nematode (scientific name) that infects the roots of tobacco plant and reduces its yield. (b) Name the vector that is used to introduce nematode-specific genes into the host plant (tobacco). (c) How do sense and anti-sense RNAs function? (d) Why could parasite not survive in a transgenic tobacco plant?</p> <p>OR</p> <p>B. (a) Name the source from which insulin was extracted earlier. Why is this insulin no more in use by diabetic people? (b) Explain the process of synthesis of insulin by Eli Lilly Company. Name the technique used by the company. (c) How is the insulin produced by human body different from the insulin produced by the above mentioned company?</p>	5
33	<p><u>Attempt either A or B:</u></p> <p>A. (i) Explain giving three reasons why tropics show greatest levels of species diversity. (ii) Draw a graph showing species-area relationship. Name the naturalist who studied such relationship. Write the observation made by him.</p> <p><u>For visually impaired students in lieu of 33 (a) (ii):-</u> Explain the status of Global Biodiversity. Give the major causes of loss of biodiversity.</p> <p>OR</p> <p>B (i) The world is facing the accelerated rate of species extinctions due to human activities. Explain any three major causes of biodiversity losses. (ii) Describe 'Ex situ' approach for conserving biodiversity. Give any two examples.</p>	5

