

Sample Question Paper 2020-21

Class XII

Biology (044) Theory

Time: 3 Hours

Maximum Marks: 70

General Instructions:

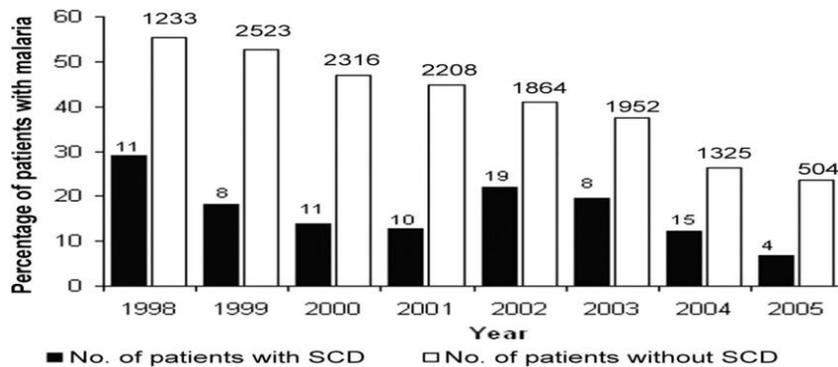
- (i) All questions are compulsory.
- (ii) The question paper has four sections: **Section A, Section B, Section C and Section D**. There are 33 questions in the question paper.
- (iii) **Section–A has 14 questions of 1 mark each and 02 case-based questions of 4 marks each. Section–B has 9 questions of 2 marks each. Section–C has 5 questions of 3 marks each and Section–D has 3 questions of 5 marks each.**
- (iv) 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.
- (v) Wherever necessary, neat and properly labeled diagrams should be drawn.

<u>SECTION - A</u>		
	<u>Questions</u>	<u>Marks</u>
1.	What is a Dicot embryo give example?	1
2.	What is the ploidy of microspore mother cell	1
3.	How xenogamy differs from geitonogamy?	1
4.	Name the accessory glands in male reproductive system.	1
5.	How many kinds of phenotypes would you expect in F ₂ generation in a monohybrid cross?	1
6.	Differentiate between pleiotropy and Polygenic inheritance.	1
7.	Write the genotypes of both the parents who have produced a colour blind offspring.	1
8.	Differentiate between pro-insulin and mature insulin.	1
9.	What is PBR322?	1
10.	Who coined the term ecology?	1

<p>11.</p>	<p>Assertion: Mendel's work was not accepted by the scientific community from 1865 to 1900</p> <p>Reason :It did not fit into that community's conception of the relationship of heredity to other Sciences</p> <ol style="list-style-type: none"> Both assertion and reason are true, and reason is the correct explanation of assertion. Both assertion and reason are true, but reason is not the correct explanation of assertion. Assertion is true but reason is false. Both assertion and reason are false. <p style="text-align: center;">OR</p> <p>Assertion: Mutation can cause a change in protein structure</p> <p>Reason: Gene mutations alter the DNA sequences of a gene.</p> <ol style="list-style-type: none"> Both assertion and reason are true, and the reason is the correct explanation of the assertion. Both assertion and reason are true, but the reason is not the correct explanation of the assertion. Assertion is true but reason is false. Both assertion and reason are false 	<p style="text-align: center;">1</p>
<p>12.</p>	<p>Assertion: Agrobacterium tumefaciens is popular in genetic engineering because this bacterium is associated with the roots of all cereal and Pulse crops</p> <p>Reason: A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the crop with which the bacterium is associated.</p> <ol style="list-style-type: none"> Both assertion and reason are true, and the reason is the correct explanation of the assertion. Both assertion and reason are true, but the reason is not the correct explanation of the assertion. Assertion is true but reason is false. Both assertion and reason are false 	<p style="text-align: center;">1</p>

13.	<p>Assertion: In mutualism both the population are benefited by the association but their relationships are not obligatory.</p> <p>Reason: Both populations compete with each other for food and space.</p> <p>a. Both assertion and reason are true, and the reason is the correct explanation of the assertion.</p> <p>b. Both assertion and reason are true, but the reason is not the correct explanation of the assertion.</p> <p>c. Assertion is true but reason is false.</p> <p>Both assertion and reason are false</p>	1
14.	<p>Assertion: Animals adopt different strategies to survive in hostile environment</p> <p>Reason: Praying Mantis is green in colour which merges with plant foliage</p> <p>a. Both assertion and reason are true, and the reason is the correct explanation of the assertion.</p> <p>b. Both assertion and reason are true, but the reason is not the correct explanation of the assertion.</p> <p>c. Assertion is true but reason is false.</p> <p>Both assertion and reason are false</p>	1
15.	<p><u>Read the following and answer any four questions from 15(i) to 15(v) given below:</u></p> <p>An association of two species, in which both species are benefited, is called mutualism. Mutualism may or may not involve close physical association between the individuals of pairs of species. Protocooperation is an association of two or more organism which is mutually beneficial but non obligatory. Protocooperation, it is non obligatory, that is, once it ends, the organism can continue to survive independently.</p>	4
(i)	<p>Select the odd one out</p> <p>(a) lichen (b) mycorrhiza (c) rhizopus and roots of leguminous plant (d) Tapeworm in small intestine</p>	
(ii)	<p>Mycorrhiza is a symbiotic association between</p> <p>(a) Roots of cycas and fungi (b) Roots of pinus and fungi (c) Roots of algae and fungi (d) Roots of angiosperm and fungi</p>	
(iii)	<p>Sedentary sea animal gets attached to the shell lining of hermit crab, the association is called</p> <p>(a) parasitism (b) Symbiosis (c) protocooperation (d) amensalism</p>	
(iv)	<p>In which of the following interaction both partners are adversely affected</p> <p>(a) competition (b) predation (c) parasitism (d) mutualism</p>	
(v)	<p>Rhizobium found in the root nodules of leguminous plant is an example of</p> <p>(a) mutualism (b) protocooperation (c) predation (d) parasitism</p>	

16.	<p><u>Read the following and answer any four questions from 16(i) to 16(v) givenbelow:</u></p> <p>Sickle cell anemia is a genetic disorder where the body produces abnormal hemoglobin called 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.</p> <p>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 anemia 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 anemia:</p> <ul style="list-style-type: none"> - Both parents have sickle cell trait - One parent has sickle cell anemia and the other has sickle cell trait - Both parents have sickle cell anemia 	4
(i)	<p>Sickle cell anemia is a/ an _____ disease.</p> <p>(a) X linked (b) autosomal dominant (c) autosomal recessive (d) Y linked</p>	
(ii)	<p>If both parents have sickle cell trait, then there is _____ of the child having sickle cell anemia.</p> <p>(a) 25 % risk, 75% risk (b) 50 % risk, 50% risk (c) 75% risk, 25% risk (d) No risk</p>	
(iii)	<p>If one parent have sickle cell trait, then there is _____ of the child having sickle cell trait.</p> <p>(a)25 % risk (b) 50 % risk (c) 75% risk (d) No risk</p>	
(iv)	<p>If one parent has sickle cell anemia and the other has sickle cell trait, there is _____ that their children will have sickle cell anemia and _____ will have sickle cell trait.</p> <p>(a) 25 % risk, 75% risk (b) 50 % risk, 50% risk (c) 75% risk, 25% risk (d) No risk</p>	



The following statements are drawn as conclusions from the above data (Kenya)

- (v)
- I. Patients with SCD (Sickle Cell Disease) are less likely to be infected with malaria.
 - II. Patients with SCD (Sickle Cell Disease) are more likely to be infected with malaria.
 - III. Over the years the percentage of people infected with malaria has been decreasing.
 - IV. Year 2000 saw the largest percentage difference between malaria patients with and without SCD.

Choose from below the correct alternative.

- (a) only I is true
- (b) I and IV are true
- (c) III and II are true
- (d) I and III are true

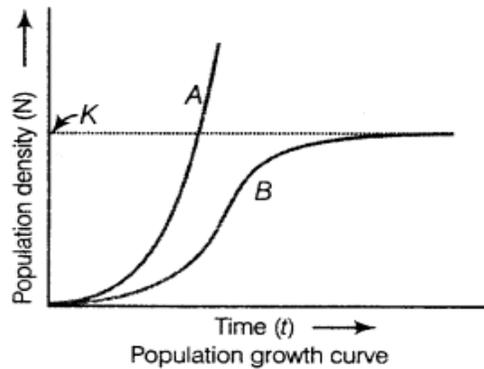
SECTION – B

17.	Why do intensely lactating mothers not generally conceive?	2
18.	State the chromosomal defect in individuals with turner's syndrome.	2
19.	Explain four advantages of biofertilizer.	2
20.	What are disarmed pathogen explain with the help of an example. OR What are bioreactors? How are large volumes of cultures maintained and processed in them?	2
21.	Explain the role of enzymes in the extraction of DNA from <i>Rhizobium</i> in its purest form.	2
22.	What are restriction endonuclease enzyme. Give their significance in Recombinant DNA technology. Or Explain the ways by which cancer can be detected.	2
23.	Explain how advanced ex-situ conservation techniques assist in preserving threatened species of plants and animals.	2
24.	Explain how parasitism differs from competition with the help of examples.	2
25.	What is the difference between endemic and exotic species?	2

SECTION-C

26.	Name the sources of oestrogen and progesterone in human females. Explain the changes brought about by them during menstrual cycle.	3
27.	A man with blood group A marries a woman with B group. They have a son with AB Blood group and a daughter with blood group O. Work out the cross and show the possibility of such inheritance.	3
28.	Define flocs and state their importance in biological treatment of waste water.	3
29.	Bt is insecticidal in nature. Explain this with the help of an example.	3

Study the graph given and answer the questions that follow



30.

3

- (i) Write the status of food and space in the curve a and b
- (ii) In the absence of predators which one of the two curves would appropriately depict the prey population?
- (iii) Time has been shown on x-axis and there is a parallel dotted line above it. Give the significance of this dotted line.

OR

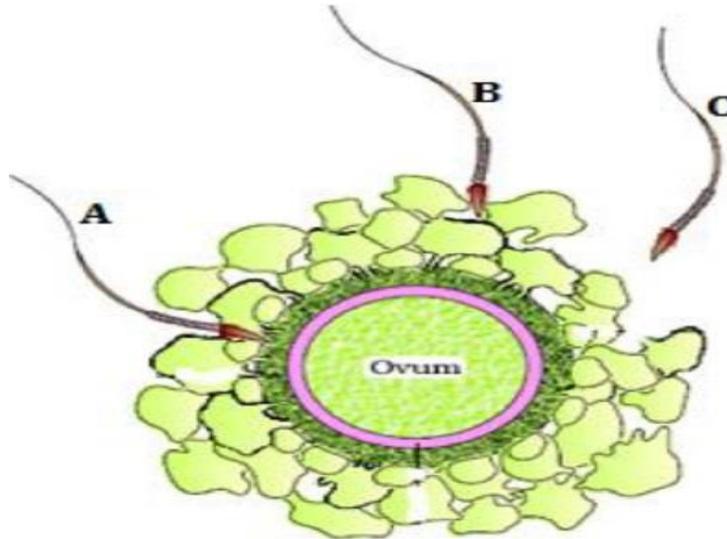
Give reasons for the following:

- a. Mammals most successful Animals on Earth
- b. Calotropis flourishes in abandoned fields
- c. Zooplanktons enter into a condition called diapause

SECTION - D

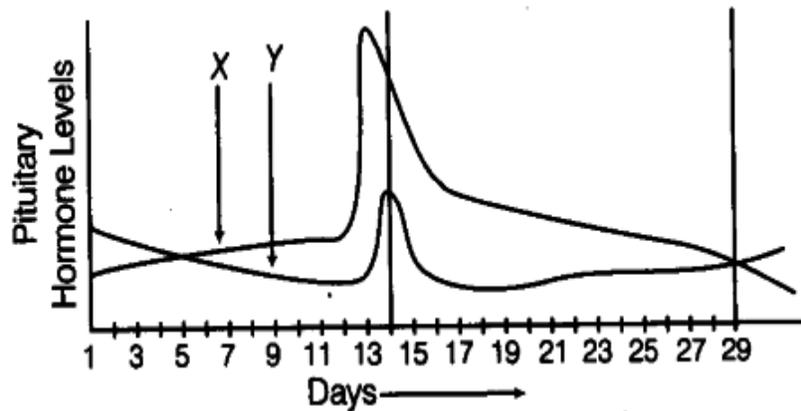
31.

Given alongside is the diagram of a human sperm. Observe the diagram and answer the following questions



- (a) Compare the fate of sperms shown in the diagram.
- (b) What is the role of zona pellucida in this process?
- (c) Analyze the changes occurring in the ovum during the process.
- (d) Mention what helps in the entry of sperm into the ovum.
- (e) Specify the region of female reproductive system where the event represented in the diagram takes place.

OR



- (a) Identify X and Y
- (b) Specify the source of hormone marked in the diagram.
- (c) Reason out why one peaks before other
- (d) Compare the role of X and Y
- (e) Under which condition will the level of y continue to remain high on the 28th day?

5

32.	<p>What is replication fork? Why it is so called. Draw the replication fork.</p> <p style="text-align: center;">OR</p> <p>Explain transcription in eukaryotes with the help of labelled diagram.</p>	5
33.	<p>Identify and name the disease in which the patient's cells lose the property of contact inhibition. State its possible causes and explain any <u>three</u> methods to accurately detect the pathological and physiological changes that take place due to the disease in living tissues.</p> <p style="text-align: center;">OR</p> <p>A patient had tested positive to ELISA Test. Identify the disease and the pathogen responsible, give reasons for the reduced/ weak immunity of the patient and trace the path, spread and effects of this pathogen in the human body.</p> <p style="text-align: center;">x</p>	5

