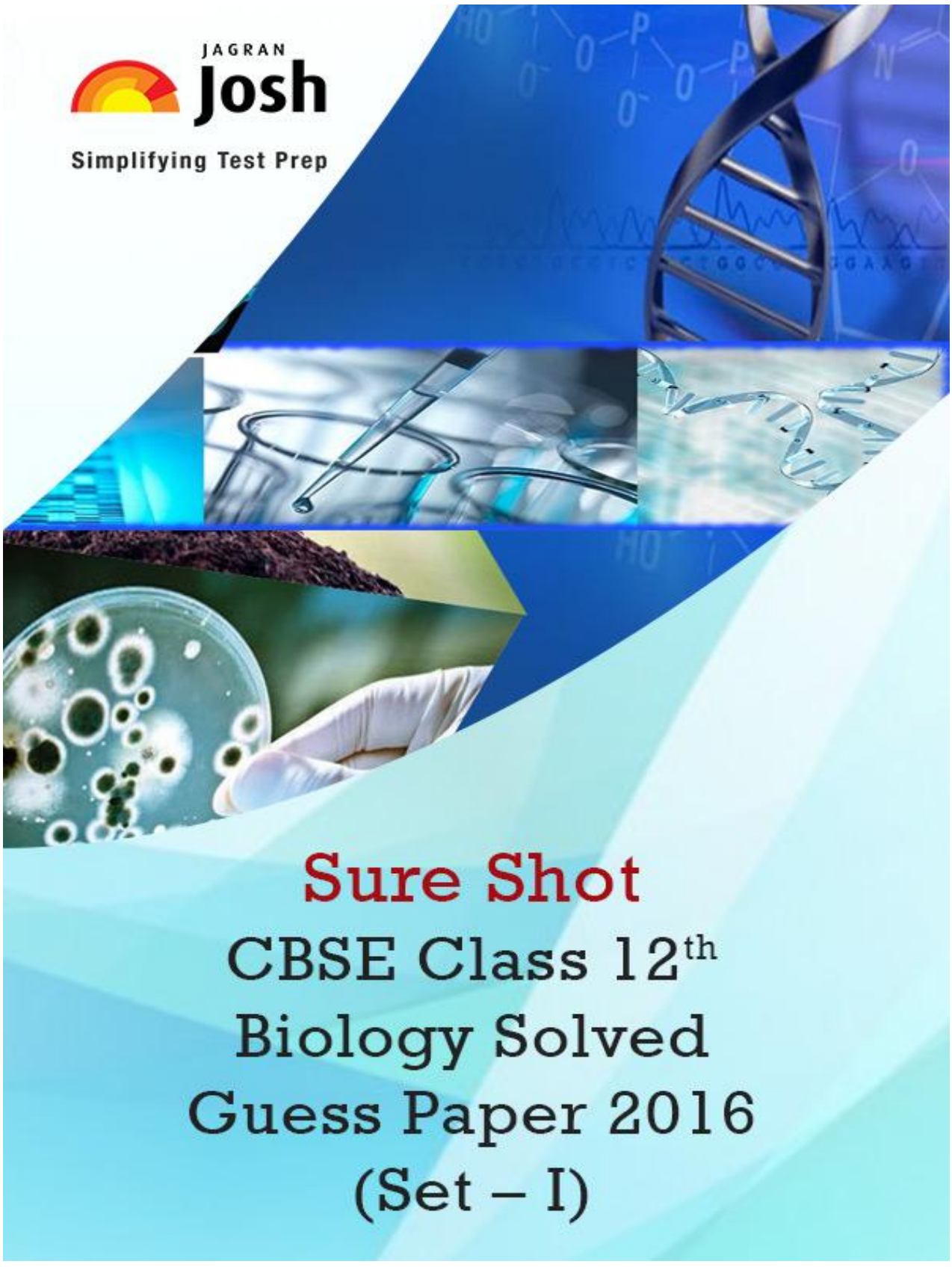
CBSE Class 12th Biology Solved Guess Paper



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CBSE Class 12th Biology Solved Guess Paper

Solved Guess Paper – 2016
Subject – Biology
Class – XII
Set – I

Time allowed: 3 hours **Maximum Marks: 70**

General Instructions:

1. There are total 26 questions and five sections in the question paper. All questions are compulsory.

2. Section A contains questions number 1 to 5; very short answer type questions of 1 mark each.

3. Section B contains questions number 6 to 10, short-answer type I questions of 2 marks each.

4. Section C contains questions number 11 to 22, short answer type II questions of 3 marks each.

5. Section D contains question number 23, value based question of 4 marks.

6. Section E contains questions number 24 to 26, long-answer type questions of 5 marks each.

7. There is no overall choice in the question paper; however, an internal choice is provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks. In these questions, an examinee is to attempt any of the two given alternatives.

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SECTION-A

Question 1. Somatic chromosome number is 40.What shall be the chromosome number in the cells of seminiferous tubules?

Answer. 20 in seminiferous tubules as they contain haploid spermatozoa.

Question 2. Which disorder is caused in man by the absence of one sex chromosome?

Answer. Noonan syndrome

Question 3. If 60 children were born in a hospital out of which 6 children died in a week, then what would be the death rate of children in that hospital?

Answer. Death rate of children for the said period is 0.1 child per week.

Question 4. Which are the two most biodiversity rich zones of India?

Answer. Western ghats and the Himalayas

Question 5. Name the unit used to measure thickness of ozone?

Answer. Dobson unit (DU)

SECTION-B

Question 6. Why DNA move towards the anode in gel electrophoresis?

Answer. Because of the negative charge of the phosphate residues in the DNA backbone, DNA molecules move toward the positive pole (anode) of the electrophoresis apparatus.

Question 7. What is corpus luteum? How does it function as an endocrine gland?

Answer. Corpus luteum is the remnant of mature follicle after ovulation. The corpus luteum produces hormones like progesterone, estrogen and relaxin. It degenerates the fibrous scar tissue called the corpus albicans.

Question 8. When a violet color flower plant is crossed with white color flower plant, it produces violet color flowers? Explain.

Answer. This shows the expression of only one of the parental characters in a monohybrid cross in the F1 and the expression of both in the F2. It also explains the proportion of 3:1 obtained at the F2.This is Mendel's law of dominance. That is why the offsprings are only violet coloured.

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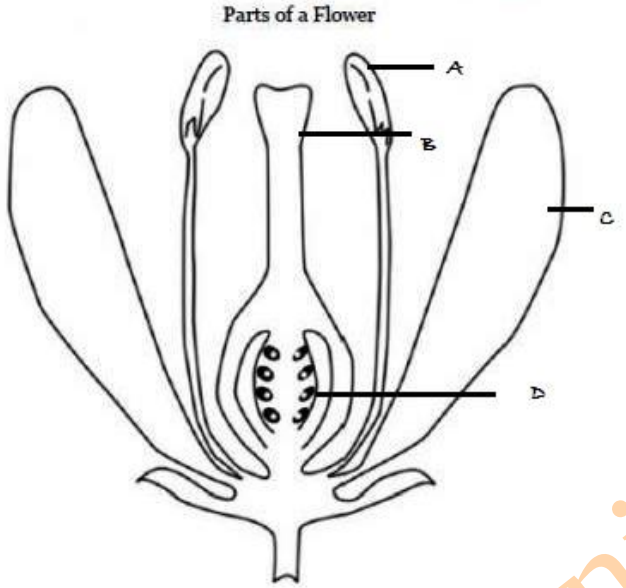
Question 9. Identify the labelled part in the given diagram :



Answer.

A- Anther

B- Stigma,

C- Sepal and

D- Ovule

OR

Why do moss plants produce very large number of male gametes? Provide one reason. What are these gametes called?

Answer.

Moss plants produce a large number of male gametes to increase the chances of fertilisation, as the eggs are located in the archegonium and the male gametes have to swim in water to reach the eggs for fertilisation to occur. The male gametes are called antherozoids.

Question 10. Answer the following questions

(i) Why are mosses or ferns so few in number? Give reason.

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(ii) Which group of plants is most advanced and which one is most primitive?

Answer.

(i) They grow in humid places and utilize water for fertilization process. Due to high temperature and dry circumstances, only a few of them survive.

(ii) Algae are the most primitive and angiosperms are the most advanced.

SECTION-C

Question 11. A person is having constant high fever (39 – 40 degree Celsius) with weakness, stomach pain and loss of appetite:

(a) Name the disease from which he is suffering from?

(b) Name the causative agent?

(c) Name the test administered to confirm the disease.

Answer.

(a) Dengue

(b) Aedes aegypti

(c) Tourniquet test

OR

How innate immunity does differ from acquired immunity? Describe any two ways by which innate immunity can be accomplished?

Answer.

Innate immunity is present since birth and the immunogens are present in the body congenially whereas acquired immunity is capable of recognizing and selectively eliminating specific foreign antigens. Acquired immunity does not come into play until there is an antigenic challenge to organism.

Two ways innate immunity can be accomplished are:

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Cytokine barriers : Virus-infected cells secrete proteins called interferons which protect non-infected cells from further viral infection.

Physiological barriers : Acid in the stomach, saliva in the mouth, tears from eyes–all prevent microbial growth.

Question 12. Why tendrils of Cucurbita and thorns of Bougainvillea considered as homologous structure? Homologous structures are result of which type of evolution?

Answer. Bougainvillea thorns and Cucurbita tendrils show homology. The same structure developed along different directions due to adaptations to different needs. This is divergent evolution and these structures are homologous. Homology indicates common ancestry. Homologous structures are a result of divergent evolution.

Question 13. State the types of interactions for the following:

(a) Between Sea anemone and clown fish

(b) Between fungus and deer

(c) Between tiger and deer

Answer.

(a) Commensalism

(b) Parasitism

(c) Predation

Question14. Give two reasons explaining why there is more species diversification in tropical latitudes than in temperate ones.

Answer.
There are three reasons for species diversification in tropical latitude

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(a) Speciation is generally a function of time, unlike temperate regions subjected to frequent glaciations in the past, tropical latitudes have remained relatively undisturbed for millions of years and thus, had a long evolutionary time for species diversification

(b) Tropical environments, unlike temperate ones, are less seasonal, relatively more constant and predictable. Such constant environments promote niche specialization and lead to a greater species diversity

(c) There is more solar energy available in the tropics, which contributes to higher productivity; this in turn might contribute indirectly to greater diversity.

Question 15. What is EL Nino effect? How it is responsible for decreasing crop productivity?

Answer. EL Nino is sudden weather phenomenon which results in reversal in wind flow. Instead of blowing from South America towards Asia across the Pacific, EL Nino results in the reverse flow from Asia towards South America. So instead of bringing rains to Asia, it takes away the moist air and dumps unwanted rains across the Pacific, causing floods. In Asia, it leads to drought conditions which cause death of crops. In other regions it causes floods, which washes away all the vegetation and crop yield, means destroying almost all the crops.

Question 16. Why is the introduction of genetically engineered lymphocytes into an ADA deficiency patient not a permanent cure? Suggest a possible cure.

Answer. The introduction of genetically engineered lymphocyte into an ADA (Adenosine Deaminase) deficiency patient is not a permanent cure as applying this technique for once is not sufficient. The deficiency needs several periodic infusions of such lymphocytes as these cells cannot survive long.
If the gene producing ADA is isolated from the bone marrow and is transfected in the cells during early embryonic development (Germline gene therapy) , it may provide a permanent cure for ADA deficiency.

Question 17. In which technique do we use Taq polymerase enzyme and why?

Answer. Taq polymerase is used in Polymerase Chain Reaction (PCR). PCR is a DNA amplification technique which creates several copies of DNA. Taq polymerase is a thermostable enzyme and can withstand high temperatures. In PCR technique, heating is done during

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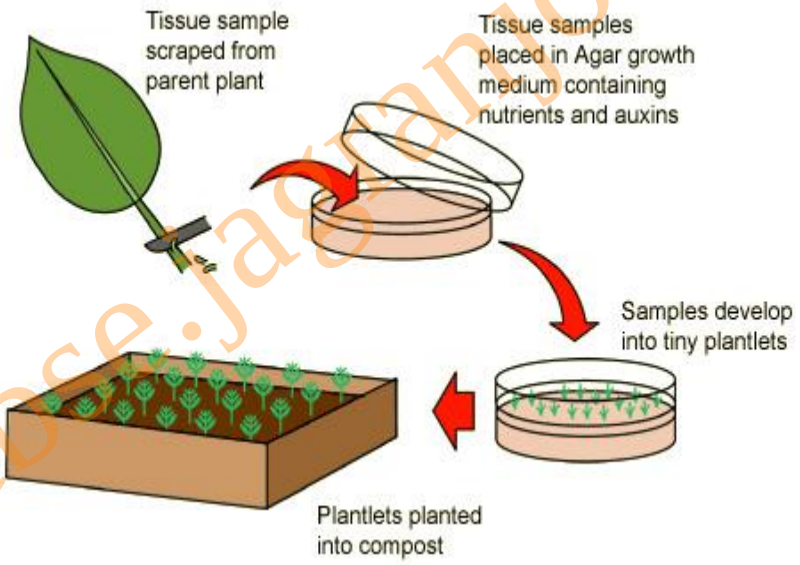
annealing stage, which is the reason this enzyme is used, so that it can function its polymerization under high temperature. It also has high specificity of primers and reduces the production of unspecific products.

Question 18. . How are somaclones cultured from explants in Inviter condition? Why somaclones are called so?

Answer. A plant (explant) is taken out and grown in a test tube under special conditions/nutrient medium. The nutrient medium must provide a carbon source (sucrose), inorganic salts, vitamins, amino acids, and growth regulators (hormones such as auxins, cytokinins etc.). It is kept under sterile conditions. After it is fully grown, it is planted in the field. Somaclones are plants produced through micropropagation technique and are genetically identical to the original plant.



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Question 19. Microbes play a dual role when used for sewage treatment as they not only help to retrieve usable water but also generates fuel. Explain.

Answer. Microorganisms and their enzyme systems are responsible for many different chemical reactions produced in the degradation of organic matter. As the microbes metabolize, grow and divide they produce enzymes. When primary sewage is mixed, aerobic microorganisms grow in it. They produce floc which later forms activated sludge. This sludge is subjected to the action of

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anaerobic digestion by anaerobic microbes. At this stage, methane, carbon dioxide, hydrogen sulphide gases are produced, which serve as fuels.

Question 20. Inter specific interactions of the two species of any population may be beneficial, detrimental or neutral. Explain each of them with the help of suitable examples.

Answer. Beneficial interaction: Lichen is an association between fungi and algae who benefit each other mutually. Algae provides a substratum and synthesizes food whereas fungi helps the plant absorb water and minerals.

Detrimental interaction: A bacterial cell can inhibit cell growth and can secrete toxins that can kill adjacent cells.

Neutral interaction: It is rare in nature however lactobacillus (causing fermentation of milk and milk products) is one such example.

Question 21. What is integumented megasporangium? Sketch the diagrammatic view of typical ovule.

Answer. Integumented megasporangium is also called nucellus. The nucellus is the central portion of the ovule inside the integuments. It functions as a megasporangium. In immature ovules, the nucellus contains a megasporocyte (megaspore mother cell), which undergoes sporogenesis via meiosis. Three of the four haploid spores produced in meiosis typically degenerate, leaving one surviving megaspore inside the nucellus, but in some cases more survive. After fertilization, the nucellus may develop into the perisperm that feeds the embryo. In some plants, the diploid tissue of the nucellus can give rise to a seed through a mechanism of asexual reproduction called nucellar embryony.

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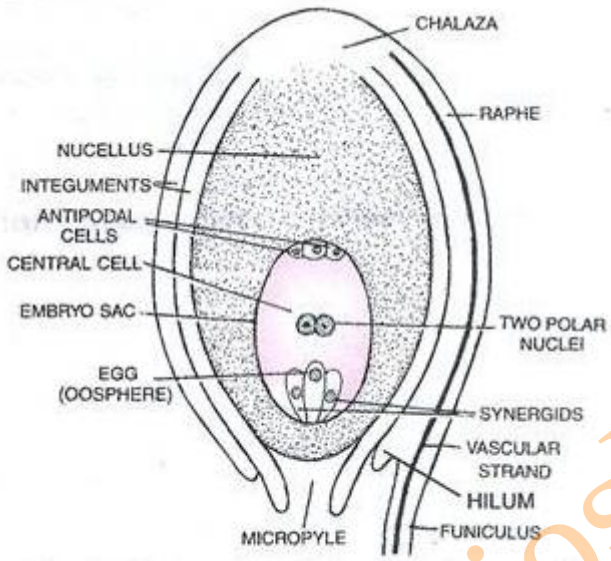

Structure of a typical ovule (anatropous ovule) prior to fertilization.

Question 22. The given flow chart is showing the ovarian changes during menstrual cycle. Name the hormone involved at each stage and explain their roles.

Primary Follicle → Graafian follicle → Ova → Corpus Luteum

Answer. FSH, LH, estrogen and progesterone play an important role in regulating the function of human female reproductive system. FSH and LH stimulates the development of follicles and secretion of estrogens by the follicles.

LH also stimulates ovulation, formation of corpus luteum and the secretion of progesterone and estrogens in the corpus luteum.

Estrogens stimulates the growth, development and maintenance of female reproductive structures and stimulate the development of secondary sexual characteristics

Progesterone works with estrogens and prepares the endometrium for implantation and the mammary glands for milk production.

Therefore, Priamry follicles undergo final maturation, estrogens are dominant ovarian hormones here. Then, mature graafian follicle ruptures and releases secondary oocytes. It is brought about by surge of LH. In the post ovulatory stage, both progesterone and estrogens are secreted in large quantities by corpus lutem.

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