



Date:07/11/23

MONTHLY TEST-03 (2023-24)

Max marks:20

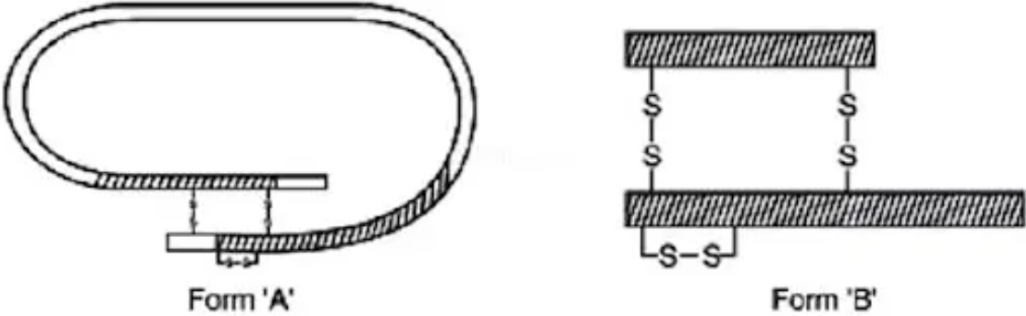
Grade:XII

BIOLOGY(044)

Time:50min

Marking scheme

Qn. No	SECTION A	Marks allocated
1	<p>For effective treatment of the disease, early diagnosis and understanding its pathophysiology is very important. Which of the following molecular diagnostic techniques is very useful for early detection?</p> <p>b)Southern blotting</p>	1
2	<p>Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:</p> <p>Assertion: Virus-infected cells secrete proteins known as interferons.</p> <p>Reason: Interferons protect the non-infected cells from bacterial infection.</p> <p>(c) If Assertion is true but Reason is false.</p>	1
3	<p>Identify the correct arrangement of periods of Palaeozoic era in ascending order in geological time scale.</p> <p>(b) Cambrian → Ordovician → Silurian → Devonian→Carboniferous → Permian</p>	1

4	<p>For transformation, microparticles coated with DNA and bombarded with a gene gun are made of</p> <p>a) Gold or Tungsten</p>	1
5	<p style="text-align: center;">SECTION B</p> <p>A patient showed symptoms of sustained high fever, stomach pain and constipation, but no blood clot in stools. Name the disease and its pathogen. Write the diagnostic test for the disease. How does the disease get transmitted?</p> <p style="background-color: #e0f0e0;">Typhoid caused by a bacterium, <i>Salmonella typhi</i>, Widal test; spread by food and water contaminated by flies.</p>	2
6	<p>a)What are cry genes? In which organisms are they present?</p> <p>b)Name a few forms of cry gene</p> <p>a)Cry genes are those genes that code for the Bt toxin protein [0.5]. They are found in <i>Bacillus thuringiensis</i></p> <p>b)cry IAC, cry IAB and cry IIAB</p>	3
7	<p>In the given figure, Form (A) and Form (B) represent different forms of a proteinaceous hormone secreted by the pancreas in mammals.</p> <div style="text-align: center;">  </div> <p>(a) Explain what type of bonding is present between chains of this hormone.</p> <p>(b) What are these forms (A) and form (B)? How do these forms differ from each other?</p> <p>(c) How was this hormone produced by Eli Lilly using rDNA technology?</p> <p style="background-color: #e0f0e0;">Eli Lilly prepared two DNA sequences corresponding to A and B</p>	3

	<p>chains of human insulin and introduced them in plasmids of E.coli to produce insulin chains. Chains A and B were produced separately, extracted and combined by creating disulphide bonds to form human insulin. Insulin in human pancreas is synthesised as a pro-hormone containing the C peptide, which is removed in mature hormone. The insulin synthesised by recombinant DNA technology did not contain C peptide and was prepared in the mature form.</p>	
8	<p>Discuss the role of lymphoid organs in the immune response. Explain the different types of lymphoid organs giving two examples of each type in humans.</p> <p>Lymphoid organs are the organs where the origin and/or maturation and proliferation of lymphocytes occur. They are of two types:</p> <p>Primary lymphoid organs are the sites where lymphocytes differentiate and mature to become antigen-sensitive, E.x. bone marrow and thymus.</p> <p>Secondary lymphoid organs provide the sites where lymphocytes interact with the antigen and proliferate to become effector cells, e.g. spleen, lymph nodes, tonsils, Peyer's patches of small intestine, etc.</p>	3
9	<p style="text-align: center;">SECTION C</p> <p>a) Explain Hardy-Weinberg's principle. b) How can Hardy-Weinberg equilibrium be affected? Explain giving three reasons. c)</p> <p>The Hardy-Weinberg law or Hardy-Weinberg equilibrium is the fundamental law of population genetics, which provides the idea for studying the Mendelian populations. This law was developed in 1908 by GH Hardy, an English mathematician and G Weinberg, a German physician. The Hardy-Weinberg law states that the genes and genotypic frequencies during a Mendelian population remain constant generation after generation if there's no selection, mutation, migration or random drift. Thus, factors affecting genetic equilibrium are:</p>	5

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| | <ol style="list-style-type: none">1. Mutations2. Genetic drift3. natural selection4. Gene flow5. Random mating | |
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