



INDIAN SCHOOL AL WADI AL KABIR
SAMPLE PAPER 2
BIOLOGY (044)
SET II

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. 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.

Sl. No.	SECTION A QUESTIONS	MARKS
1	Give the special features of cells present in the innermost layer of anther wall	1
2	In most of the angiosperms, the embryo sac development is monosporic. Justify	1
3	Seed set is assured in plants like <i>Commelina</i> and <i>Oxalis</i> . Give reason.	1
4	Breast – feeding during initial period of infant growth is recommended by doctors for bringing up a healthy baby. Why?	1
5	Give the genotypic and phenotypic ratio of selfing of a progeny which is produced as a result of crossing of two homozygous plants having contrasting traits (example height of stem)	1
6	What are the important roles of pedigree analysis in humans?	1
7	Distinguish between cistron and exon.	1
8	What is the importance of the microbe <i>Thermus aquaticus</i> in the field of genetic engineering?	1
9	Name the recombinant protein and its quantity present in the milk of transgenic cow Rosie	1
10	Alien species invasions are one of the major reasons for loss of biodiversity. Name any two alien plants as examples for this.	1
11	Assertion: Deoxyribonucleoside triphosphates provide energy for polymerization reaction. Reason: The two terminal phosphates are high energy phosphates in ATP. (a) Both assertion and reason are true, and reason is the correct explanation of assertion.	1

	<p>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.</p> <p>(c) Assertion is true but reason is false.</p> <p>(d) Both assertion and reason are false</p> <p style="text-align: center;">OR</p> <p>Assertion: VNTR probes are used in DNA fingerprinting Reason: VNTR shows high degree of polymorphism and after hybridization with probes, the autoradiogram gives many bands</p> <p>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.</p> <p>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.</p> <p>(c) Assertion is true but reason is false.</p> <p>(d) Both assertion and reason are false</p>	
12	<p>Assertion: In <i>Escherichia coli</i>, the growth of the bacteriophage is restricted by an enzyme which cuts DNA at specific sites and then added methyl groups to the same DNA. Reason: Cutting of DNA inactivated the bacterial genome and thus inhibiting the growth</p> <p>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.</p> <p>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.</p> <p>(c) Assertion is true but reason is false.</p> <p>(d) Both assertion and reason are false</p>	1
13	<p>Assertion: The biodiversity at the species level is known as species diversity Reason: The variation shown by the medicinal plant <i>Rauwolfia vomitoria</i> growing in different Himalayan ranges might be in terms of potency of reserpine.</p> <p>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.</p> <p>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.</p> <p>(c) Assertion is true but reason is false.</p> <p>(d) Both assertion and reason are false</p>	1
14	<p>Assertion: Many desert plants have a special photosynthetic pathway known as CAM pathway Reason: CAM pathway helps to take carbon dioxide through the stomata during day time.</p> <p>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.</p>	1

	<p>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.</p> <p>(c) Assertion is true but reason is false.</p> <p>(d) Both assertion and reason are false</p>	
15	<p><i>Read the following and answer any four questions from 15(i) to 15(v) given below:</i></p> <p>Immunisation and vaccination</p> <p>Immunization is a global health and development success story, saving millions of lives every year. Vaccines reduce risks of getting a disease by working with your body’s natural defenses to build protection. Immunization currently prevents 2-3 million deaths every year from diseases like diphtheria, tetanus, pertussis, influenza and measles.</p> <p>The percentage of children receiving DTP vaccine is often used as an indicator of how well countries are providing routine immunization services. In 2019, global coverage rates for the third dose of the DTP3 reached 85 per cent, up from 72 per cent in 2000 and 20 per cent in 1980. Since the use of rotavirus vaccines have been approved, they have had a notable impact on the reduction of rotavirus-related deaths. According to a study published in 2018, the use of rotavirus vaccines prevented approximately 28,900 child deaths globally in 2016. However full vaccine use – that is a 100% coverage globally – could have prevented an additional 83,200 deaths. This means that, even at the current rates of efficacy, 53% of all deaths in children under-5 from rotavirus in 2016 could have been avoided by full vaccine coverage.</p>	4
i	<p>The process of immunization activates which system of our body?</p> <p>(a) Innate immunity</p> <p>(b) Acquired immunity</p> <p>(c) Passive immunity</p> <p>(d) Both (a) and (b)</p>	
ii	<p>Identify the vaccine which is given in three booster doses</p> <p>(a) BCG</p> <p>(b) Polio</p> <p>(c) DPT</p> <p>(d) Rotavirus</p>	
iii	<p>Which of the following represents the correct pair of diseases that can be prevented by vaccination?</p> <p>(a) Diphtheria and AIDS</p> <p>(b) Pertussis and Corona</p> <p>(c) Tuberculosis and Tetanus</p> <p>(d) Small pox and Cancer</p>	

iv Antibodies are directly supplied to the body in which of the following cases?
 (a) Snake bite
 (b) Polio vaccine
 (c) HIV infection
 (d) None of these

v Observe the graph carefully,

Preventable child deaths from rotavirus vaccination, 2016

Annual number of preventable deaths in children under five years old from rotavirus if full coverage of the rotavirus vaccine was achieved. Rotavirus is one of the leading causes of diarrheal disease deaths in children.

Region/Country	Number of Deaths
World	83,158
Sub-Saharan Africa	67,234
South Asia	10,093
India	7,712
Uganda	1,639
Kenya	455
Congo	117
Central Asia	101
China	56
Japan	6
Germany	3
England	1
Israel	1
Australia	0
New Zealand	0
United Arab Emirates	0

The following statements are drawn as conclusions from the above data

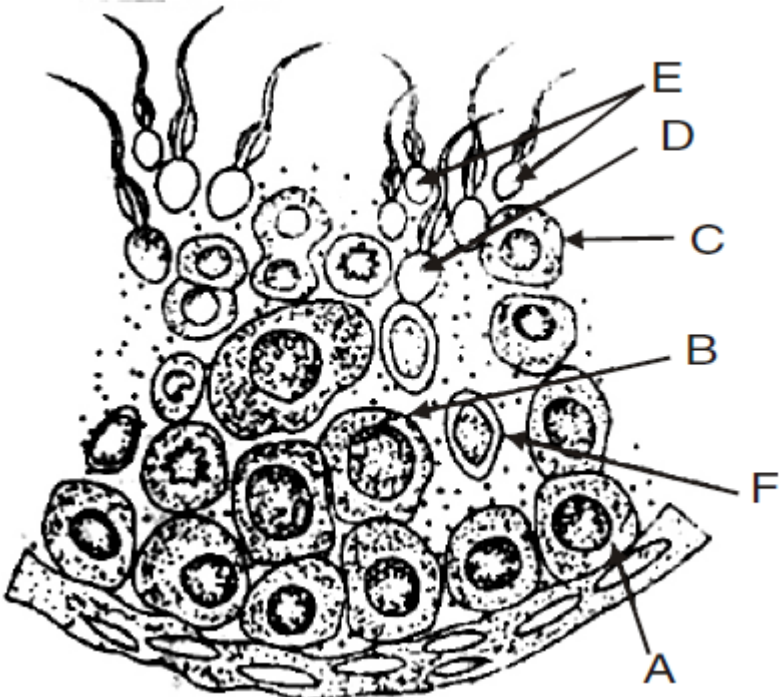
- I. The rate of vaccination is least in countries like New Zealand, Australia etc.
- II. The rate of vaccination is maximum in Africa
- III. 100% vaccination can prevent child death due to Rota virus
- IV. As the rate of vaccination increases the acquired immunity also increases

Choose from below the correct alternative

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

16	<p>Read the following and answer any four questions from 16(i) to 16(v) given below:</p> <p>Haemophilia</p> <p>Haemophilia is a mostly inherited genetic disorder that impairs the body's ability to make blood clots, a process needed to stop bleeding. This results in people bleeding for a longer time after an injury, easy bruising, and an increased risk of bleeding inside joints or the brain. Those with a mild case of the disease may have symptoms only after an accident or during surgery. Bleeding into a joint can result in permanent damage, while bleeding in the brain can result in long term headaches, seizures etc.</p> <p>There are two main types of haemophilia: haemophilia A, which occurs due to low amounts of clotting factor VIII, and haemophilia B, which occurs due to low levels of clotting factor IX. They are typically inherited from one's parents through an X chromosome carrying a nonfunctional gene. Rarely a new mutation may occur during early development or haemophilia may develop later in life due to antibodies forming against a clotting factor. Other types include haemophilia C, which occurs due to low levels of factor XI, and parahaemophilia, which occurs due to low levels of factor V. Acquired haemophilia is associated with cancers, autoimmune disorders, and pregnancy. Diagnosis is by testing the blood for its ability to clot and its levels of clotting factors.</p>	4
i	<p>Haemophilia is a/ an _____ disease.</p> <p>(a) Sex linked (b) Autosomal dominant (c) Autosomal recessive (d) Y linked</p>	
ii	<p>If both parents are haemophilic then there is _____ of the child having haemophilia.</p> <p>(a) 25 % risk (b) 50 % risk (c) 75% risk (d) 100% risk</p>	
iii	<p>If father is haemophilic and mother is normal then there is _____ of the son having haemophilia.</p> <p>(a) 25 % risk (b) 50 % risk (c) 75% risk (d) No risk</p>	
iv	<p>If father is normal and mother is haemophilic then there is _____ of the daughter having haemophilia.</p> <p>(a) 25 % risk (b) No risk (c) 75% risk (d) 100% risk</p>	

v	<p>Assertion: Hemophilia follows a Criss cross pattern of inheritance Reason: Recessive haemophilic gene is transferred from father to son and then to grand daughter (a) Both assertion and reason are true, and the reason is the correct explanation of the assertion. (b) Both assertion and reason are true, but the reason is not the correct explanation of the assertion. (c) Assertion is true but reason is false. (d) Both assertion and reason are false</p>	
SECTION B		
17	List the complications which are associated with STDs if not treated correctly.	2
18	Give any two reasons for common chromosomal disorders in humans	2
19	What would happen to the immune system, if thymus gland is removed from the body of a person?	2
20	Name two main steps which are collectively referred to as down streaming process. Why is this process significant? OR How will you obtain purified DNA from a cell?	2
21	Since DNA is a hydrophilic molecule, it cannot pass through cell membranes. Name and explain the technique with which the DNA is forced into- (i) a bacterial cell (ii) a plant cell	2
22	A linear DNA fragment and a plasmid has three restriction sites for EcoRI. How many fragments will be produced from linear DNA and plasmid respectively? OR Write conventional nomenclature of EcoRI.	2
23	How many species of plants and animals have been described by IUCN in 2004? What is global species diversity according to Robert May?	2
24	List four features which enable the Xeric plants to survive in the desert conditions.	2
25	Define cryopreservation. Why is it useful in conserving biodiversity?	2
SECTION C		
26	Three of the steps of neuro endocrine mechanism in respect of parturition are mentioned below. Write the missing steps in proper sequence. (a) Signals originate from fully developed foetus and placenta. (b) _____. (c) _____. (d) Oxytocin causes strong uterine contraction (e) Uterine contraction stimulates further secretion of oxytocin. (f) _____.	3
27	In Mendel's breeding experiment on garden pea, the offspring of F2 generation are obtained in the ratio of 25% pure yellow pod, 50% hybrid green pods and 25% green pods. State (i) which pod colour is dominant (ii) The Phenotypes of the individuals of F1 generation. (iii) Workout the cross.	3
28	Mention any three causes of drug abuse. Suggest some measures for the prevention and control of drug abuse.	3

29	<p>A bacterium <i>Bacillus thuringiensis</i> produces a toxic protein named ‘cry protein’ that is lethal to certain insects but not to bacterium.</p> <p>(a) Why this toxin does not kill the bacteria? (b) What type of changes occur in the gut of insects on consuming this protein? (c) How man has exploited this protein for his benefit?</p>	3
30	<p>How does the shape of age pyramid reflect the growth status of a Population?</p> <p style="text-align: center;">OR</p> <p>What is altitude sickness? What are the causes and symptoms? How does human body try to overcome altitude sickness?</p>	3
SECTION D		
31	<p>The pathogen of a disease depends on RBCs of human for growth and reproduction. The person with this pathogen suffers with chill and high fever.</p> <p>(a) Identify the disease. (b) Name the pathogen. (c) What is the cause of fever? (d) Represent the life cycle of the pathogen diagrammatically.</p> <p style="text-align: center;">OR</p> <p>Answer the following with respect to Cancer.</p> <p>(a) How does a cancerous cell differ from a normal cell? (b) Benign tumor is less dangerous than malignant tumor. Why? (c) Describe causes of cancer. (d) Mention two methods of treatment of the disease.</p>	5
32	<p>State salient features of genetic code.</p> <p style="text-align: center;">OR</p> <p>Describe the process of transcription of mRNA in a eukaryotic cell.</p>	5
33	<p>Study the figure given :</p> 	5

<p>(i) Pick out and name the cells that undergo spermiogenesis.</p> <p>(ii) Name A, B, C and F.</p> <p>(iii) Give ploidy of B and E</p> <p>(iv) Mention the function of 'F' cell.</p> <p style="text-align: center;">OR</p> <p>(I) Give reason for the following :</p> <p>(a) The first half of the menstrual cycle is called follicular phase as well as proliferative phase.</p> <p>(b) The second half of the menstrual cycle is called luteal phase as well as secretory phase.</p> <p>(II) Draw diagrammatic sectional view of Human ovary and label ovum, corpus luteum, Graafian follicle and primary follicle.</p>	
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