

## GOVERNMENT HIGHER SECONDARY PUBLIC EXAM – MARCH - 2023

## TENTATIVE SCORING KEY

STD: XII

SUB: BIO – ZOOLOGY

(DISCLAIMER – This key is meant for students reference only and not for evaluation purpose)

SECTION – 1						8 x 1 = 8
Q. NO	A - TYPE	MARK	Q. NO	B - TYPE	MARK	
1	(a) 13 Trisomy	1	1	(b) Progesterone and estrogen	1	
2	(d) Exogenous budding	1	2	(a) Amphibians	1	
3	(d) IgA	1	3	(c) Fungi	1	
4	(d) anti-viral substances	1	4	(d) IgA	1	
5	(b) Progesterone and estrogen	1	5	(a) 13 Trisomy	1	
6	(c) Fungi	1	6	(d) Exogenous budding	1	
7	(a) Amphibians	1	7	(d) Lipase	1	
8	(d) Lipase	1	8	(d) anti-viral substances	1	

## SECTION - 2

NOTE: Answer any four questions.

2 Marks

Q.NO	ANSWERS	MARKS
9	<b>What are the three layers of uterine wall?</b> <ol style="list-style-type: none"> <li>The wall of the uterus has three layers of tissues.</li> <li>The outermost layer - Perimetrium,</li> <li>The middle layer – Myometrium</li> <li>The inner layer - Endometrium.</li> </ol>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ <b>(Total- 2)</b>
10	<b>Which are called as non-sense codons in genetic code?</b> <ol style="list-style-type: none"> <li>UGA Any one correct answer – 1 Mark</li> <li>UAG and Any two correct answer – 1 <math>\frac{1}{2}</math> Mark</li> <li>UAA Three correct answer – 2 Mark</li> </ol>	<b>2</b> <b>(Total- 2)</b>
11	<b>Differentiate Convergent Evolution and Divergent Evolution.</b> <ol style="list-style-type: none"> <li>Structures which are similar in origin but perform different functions are called homologous structures that brings about divergent evolution</li> <li><b>Ex:</b> Fore limbs of vertebrates</li> <li>Organisms having different structural patterns but similar function are termed as analogous structures that brings about convergent evolution</li> <li><b>EX:</b> the wings of birds and insects</li> </ol>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ <b>(Total- 2)</b>
12	<b>Name any four human viral diseases.</b> <ol style="list-style-type: none"> <li>Common cold</li> <li>Mumps</li> <li>Measles</li> <li>Viral hepatitis</li> </ol>	Any four <b>4 X <math>\frac{1}{2}</math> = 2</b>

	5. Dengue fever 6. Chikungunya 7. Chicken pox 8. Poliomyelitis	(Total- 2)
13	<b>Give the expansion of : (a) CFC (b) PAN</b> (a) CFC: Chloro fluoro carbon (b) PAN: Peroxyacetyl nitrate	1 1 (Total -2)
14	<b>What are Stenotherms? Give examples.</b> 1. Organisms which can tolerate only a narrow range of temperature. 2. EX: Fish, Frogs, Lizards and Snakes <b>(Any two examples)</b>	1 1 (Total -2)

## SECTION - 3

NOTE: Answer any three questions. Question No. 19 is Compulsory

3 MARKS

Q.NO	ANSWERS	MARKS
15	<b>What is meant by regeneration? Give example.</b> 1. Regeneration is regrowth in the injured region. 2. It was first studied in Hydra by Abraham Trembley in 1740. <b>Regeneration is of two types:</b> 3. <b>Morphallaxis:</b> The whole body grows from a small fragment E.g. Hydra and Planaria. 4. <b>Epimorphosis:</b> Epimorphosis is the replacement of lost body parts. 5. <b>Types:</b> reparative and restorative regeneration.	1 ½ ½ ½ ½ (Total -3)
16	<b>Mention any three applications of karyotyping. (Any three)</b> 1. It helps in gender identification. 2. It is used to detect the chromosomal aberrations like deletion, duplication, translocation, nondisjunction of chromosomes. 3. It helps to identify the abnormalities of chromosomes like aneuploidy. 4. It is also used in predicting the evolutionary relationships between species. 5. Genetic diseases in human beings can be detected by this technique.	(Total -3)
17	<b>What is single cell protein? Write its uses.</b> 1. Single cell protein refers to edible unicellular microorganisms like Spirulina. 2. Protein extracts from pure or mixed cultures of algae, yeasts, fungi or bacteria. <b>Uses:</b> 3. Ingredient or as a substitute for protein rich foods. 4. Suitable for human consumption or as animal feed.	1 1 ½ ½ (Total-3)



18	<b>What are the differences between in-situ and ex-situ conservation?</b>		1  1  1 <b>(Total-3)</b>
	<b><i>In situ</i> Conservation</b>	<b><i>Ex situ</i> Conservation</b>	
	It is the on-site conservation or the conservation of genetic resources in natural populations of plant or animal species.	This is a conservation strategy which involves placing of threatened animals and plants in special care locations for their protection.	
	It is the process of protecting an endangered plant or animal species in its natural habitat, either by protecting or restoring the habitat itself, or by defending the species from predators.	It helps in recovering populations or preventing their extinction under simulated conditions that closely resemble their natural habitats.	
	National Parks, Biosphere Reserve, Wild Life Sanctuaries form <i>insitu</i> conservation strategies.	Zoological parks and Botanical gardens are common <i>exsitu</i> conservation programs.	
19	<b>What are the multipotent cells involved in replenishing adult tissue? What is the rich source for it?</b>		1  1  1 <b>(Total-3)</b>
	1. Adult stem cells are found in various tissues of children as well as adults.		
	2. Most of the adult stem cells are multipotent and can act as a repair system of the body, replenishing adult tissues.		
	3. The red bone marrow is a rich source of adult stem cells		

**SECTION - 4**

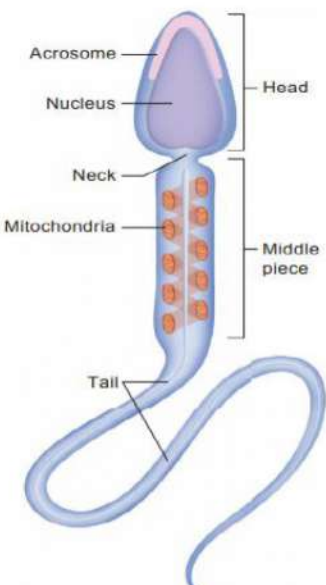
Note: Answer all the questions.

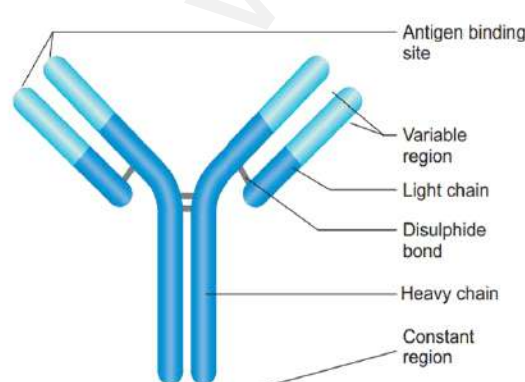
**5 MARKS**

Q.NO	ANSWERS	MARKS
20. (a)	<b>Describe the structure of human sperm with a neat labelled diagram.</b>	½  ½ ½ ½  ½  ½  ½
	1. The human sperm is a flagellated, motile gamete. It is composed of <b>head, neck and a tail.</b>	
	<b>Head:</b>	
	2. <b>The head</b> comprises of acrosome and nucleus.	
	3. <b>Acrosome</b> is a small cap like pointed structure present at the tip of the nucleus and is formed mainly from the Golgi body of the spermatid.	
	4. It contains hyaluronidase, a proteolytic enzyme (sperm lysine) which helps to penetrate the ovum during fertilisation.	
	<b>The Neck:</b>	
	5. <b>The neck</b> is very short and it contains the proximal centriole and the distal centriole.	
	<b>The Body</b>	
6. <b>The middle piece</b> possesses mitochondria spirally twisted around the axial filament called mitochondrial spiral or nebenkern.		
7. It produces energy in the form of ATP molecules for the movement of sperms.		
<b>The tail:</b>		
8. <b>Tail</b> is the longest part of the sperm and is slender and tapering.		
9. It is formed of a central axial filament or axoneme and an outer		

MARCH – 2023 – PLUS TWO BIO – ZOOLOGY SCORING KEY

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	<p>protoplasmic sheath.</p>  <p style="text-align: center;"><b>Diagram - 1 mark (Any 4 Parts)</b></p>	<p><b>(Total-5)</b></p>
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<p><b>20.</b> <b>(b)</b></p>	<p><b>(b) Explain the structure of immunoglobulin with suitable diagram.</b></p> <ol style="list-style-type: none"> <li>1. In 1950s, Porter and Edelman revealed the basic structure of the immunoglobulin.</li> <li>2. An antibody molecule is Y shaped structure that comprises of 4 four polypeptide chains.</li> <li>3. Two identical light chains (L) of molecular weight 25,000 Da (214 amino acids).</li> <li>4. Two identical heavy chains (H) of molecular weight 50,000 Da (450 amino acids).</li> <li>5. The polypeptide chains are linked together by di-sulphide (S-S) bonds.</li> <li>6. One light chain is attached to each heavy chain and 2 heavy chains are attached to each other to form a Y shaped structure. Hence, an antibody is represented by H<sub>2</sub> L<sub>2</sub>.</li> <li>7. They are C - terminal (Carboxyl) and amino or N-terminal. Each chain (L and H) has two regions.</li> <li>8. They have variable (V) region at one end and a much larger constant (C) region at the other end.</li> </ol>  <p style="text-align: center;"><b>Diagram – 1 Mark (Any 4 Parts)</b></p> <p style="text-align: center;"><b>Fig. 7.15 Structure of immunoglobulin</b></p>	<p><b>(Total-5)</b></p>
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**Explain the structure of RNA which plays a vital role in protein synthesis by transferring amino acids with diagram**

1. The transfer RNA, (tRNA) molecule of a cell acts as a vehicle that picks up the amino acids scattered through the cytoplasm and also reads specific codes of mRNA molecules.
2. The two dimensional clover leaf model of tRNA was proposed by Robert Holley.
3. The secondary structure of tRNA looks like a clover leaf.
4. In actual structure, the tRNA is a compact molecule which looks like an inverted L.
5. The clover leaf model of tRNA shows the presence of three arms namely DHU arm, middle arm and TΨC arm.
6. These arms have loops such as amino acyl binding loop, anticodon loop and ribosomal binding loop at their ends.
7. In addition it also shows a small lump called variable loop or extra arm.
8. The amino acid is attached to one end (amino acid acceptor end) and the other end consists of three anticodon nucleotides.
9. The anticodon pairs with a codon in mRNA ensuring that the correct amino acid is incorporated into the growing polypeptide chain.
10. Four different regions of double-stranded RNA are formed during the folding process. Modified bases are especially common in tRNA.

Any 8

8 x ½ = 4

(Total-5)

21.  
(a)

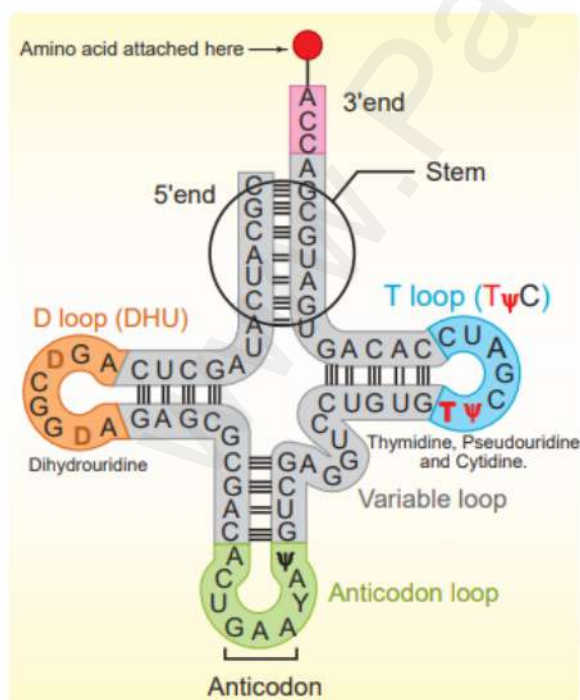


Diagram – 1 Mark

Fig. 5.11 Holley's two-dimensional clover leaf model of transfer RNA

21. (b)	<b>List out the human activities causing biodiversity loss.</b>	
	1. Apart from natural causes, human activities, both directly and indirectly are today's main reason for habitat loss and biodiversity loss.	1
	2. Fragmentation and degradation due to agricultural practices.	1
	3. Extraction (mining, fishing, logging, harvesting).	1
	4. Development (settlements, industrial and associated infrastructures) leads to habitat loss.	1
	5. Fragmentation leads to formation of isolated, small and scattered populations and as endangered species.	1
		<b>(Total-5)</b>

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