DIRECTORATE OF GOVERNMENT EXAMINATION, CHENNAI-6
HIGHER SECONDARY SECOND YEAR PUBLIC EXAMINATION. MAY -2022
KEY ANSWER FOR BIO – ZOOLOGY (NEW SYLLABUS)

NOTE: **TOTAL MARKS: 35**

1. **Answer written only in BLACK or BLUE should be evaluated**
2. **Choose the correct answer and write the option code**
3. **If one of them (option or answer) is wrong, then award zero mark only**

PART-II. (BIO – ZOOLOGY)
SECTION –1

Note: - Answer all the questions
Each question carries 1 mark **8 X 1 = 8**

Q. No	ANSWER			
	TYPE - A		TYPE - B	
1	d	Transcription	a	Amphibians
2	c	Trichoderma polysporum	b	Extinction
3	a	Devonian	a	Epididymis
4	b	Extinction	d	O
5	a	Amphibians	d	Transcription
6	d	O	c	Trichoderma polysporum
7	b	Denaturation, Annealing, Synthesis	a	Devonian
8	a	Epididymis	b	Denaturation, Annealing, Synthesis

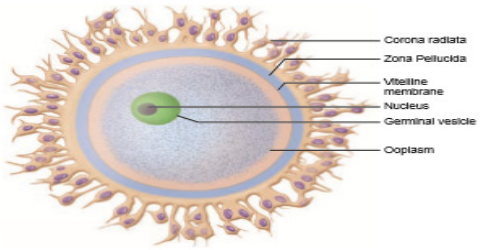
SECTION – 2

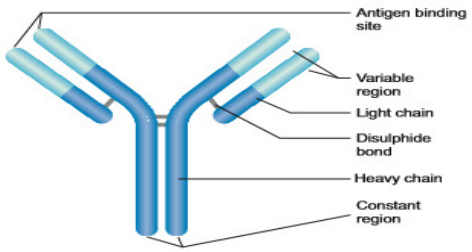
Note:- Answer any Four questions **4 X 2 = 8**

<table>
<tr><th>Q.no</th><th>ANSWERS</th><th colspan="2">MARKS</th></tr>
<tr><td>9</td><td><u>Parthenogenesis: -</u>
(i) Development of an egg into a complete individual without fertilization
(ii) E.g -- Honeybees, Gall fly, Annelid and seaurchin
Sporocysts and Redia larvae of liver fluke (any one)</td><td>1 ½

½</td><td>2</td></tr>
<tr><td>10</td><td><u>Surrogacy:-</u>
Surrogacy is a method of reproduction or an agreement whereby a woman agrees to carry a pregnancy for another person who will become the new born child's parent after birth.</td><td></td><td>2</td></tr>
<tr><td>11</td><td><u>Differentiate Template strand and Coding strand</u>: (Any 2)
<table>
<tr><th>s.no</th><th>Template strand</th><th>Coding strand</th></tr>
<tr><td>1</td><td>Leading strand</td><td>Lagging strand</td></tr>
<tr><td>2</td><td>DNA strand with 3' → 5' polarity.</td><td>DNA strand with 5'→ 3' polarity</td></tr>
<tr><td>3</td><td>Replication is continuous</td><td>Replication is discontinuous</td></tr>
</table></td><td>2 x 1</td><td>2</td></tr>
</table>

12	**Disproved Lamarck's theory of Acquired characters:-** **(a).** August Weismann. **(b).** (i). August Weismann conducted experiments on mice for twenty generations by cutting their tails and breeding them. All mice born were with tail. (or) (ii).The somatoplasm will not be transferred to the next generation.	**1** **1**	` **2**
13	**Symptoms of Filariasis: -** **(Any 2)** (i) Inflammation of the lymph nodes. (ii) The obstruction of lymph vessels (iii) Inflammation in limbs, scrotum and mammary glands.	**2X1**	**2**
14	**Gene therapy :-** The process involves the transfer of a normal gene into a person's cells that carries one or more mutant alleles. **(Or)** Genetic defect could be corrected by a process called gene therapy		**2**
	SECTION – 3 **Note :- Answer any three questions** **Question no.19 is compulsory** **3 X 3 = 9**		
15	**Differentiate Foeticide and Infanticide** **(i). Foeticide: -** Aborting the female in the mother's womb. **(ii). Infanticide: -** killing the female child after her birth.	**1½** **1½**	**3**
16	**Mere Attempt**		**3**
17	**Antibiotic Resistance Develop: -** (i) Misuse of antibiotics (ii) Over use of antibiotics. (iii) Poor infection prevention control	**1** **1** **1**	**3**
18.	**Differentiate Natality from Mortality:** **Mortality :** Mortality is the population decline factor **(Or)** Number of deaths per unit time Death rate (d) = ---------- Average population **Natality :** Populations increase because of natality. **(Or)** Number of birth per unit time Birth rate (b) = ---------- Average population	**1 ½** **1 ½**	**3**
19	**In the XY chromosomal system of sex determination, males have only one X chromosome, whereas females have two: -** **(Any 2)** 1. In mammals the necessary dosage compensation is accomplished by the inactivation of one of the X chromosome in females 2. So that both males and females have only one functional X chromosome per cell. 3. Mary Lyon suggested that bar bodies represented an inactive chromosome or Lyon's hypothesis.	**2 X** **1½**	**3**

	SECTION – 4 **Note :- Answer any three questions** **2 x 5 =10**		
20 **(a)**	**<u>Structure of Human ovum</u>:-** **(Any 3)** **(1). Explanation:-** 1. Ovum is non-cleidoic, alecithal and microscopic in nature. 2. Cytoplasm called ooplasm 3. It contains a large nucleus called the germinal vesicle. 4. The ovum is surrounded by three coverings namely a. An inner thin transparent vitelline membrane, b. Middle thick zona pellucida c.Outer thick coat of follicular cells called corona radiata. 5. Between the vitelline membrane and zona pellucida is a narrow perivitelline space. **(2). Draw and Label**  	3 X 1 2	**5**
	(Or)		
(b)	**<u>Salient features of Human Genome Project:-</u>** **(Any 5 points)** 1. The human genome contains 3 billion nucleotide bases. 2. An average gene consists of 3000 bases 3. Genes are distributed over 24 chromosomes 4. Chromosome 19 has the highest gene density. Chromosome 13 and Y chromosome have lowest gene densities. 5. The chromosomal organization of human genes shows diversity. 6. There may be 35000-40000 genes in the genome and almost 99.9 nucleotide bases are exactly the same in all people. 7. Functions for over 50 percent of the discovered genes are unknown. 8. Less than 2 percent of the genome codes for proteins. 9. Chromosome 1 has 2968 genes whereas chromosome 'Y' has 231 genes. 10. Scientists have identified about 1.4 million locations were single base DNA differences	**5 x 1**	**5**
21 **(a)**	**<u>Immunoglobulin molecule:-</u>** **(1). Explanation** (Any 6 points) (i) An immunoglobulin molecule is Y shaped structure that comprises of four polypeptide chains. (ii) Light chains (L) of molecular weight 25,000 Dalton (approximately 214 amino acids) (iii)Heavy chains (H) of molecular weight 50,000 Da (approximately 450 amino acids). (iv)The polypeptide chains are linked together by di-sulphide (S-S) bonds.	6 x ½ = 3	

	(v) One light chain is attached to each heavy chain and two heavy chains are attached to each other (vi) Each chain (L and H) has two terminals. They are C - terminal (Carboxyl) and amino or N-terminal. (vii) Each chain (L and H) has two regions. They have variable (V) region at one end and a much larger constant (C) region at the other end. **(2). Draw and Label**  	**2**	**5**
	(Or)		
(b)	**Radioactive Waste Management:-** **I. Explanation:-** Radioactive waste management involves the treatment, storage, and disposal of liquid, airborne, and solid effluents from the nuclear industry. **II. Methods of disposal of radioactive wastes:** **1. Limit generation:-** Limiting the generation of waste. **2. Dilute and disperse:-** Low radioactivity - dilution and dispersion are adopted. **3. Delay and decay:-** Nuclear reactors and accelerators is very short lived. **4. Concentrate and confine process:-** The objective of treatment activities for longer-lived radioactivity. **II. Control and Management :-** **1. Spent Fuel Pools:-** The spent fuel discharged from the reactors is temporarily stored in the reactor pool. **2. Vitrification method :-** Nuclear waste are encased in dry cement caskets. **3. Geological Repositories:-** Nuclear waste repository excavated deep within a stable geologic environment.	**1** **2** **2 x 1**	**5**