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COMMON PUBLIC EXAM 2025

XII – BIO-ZOOLOGY – TENTATIVE ANSWER KEY

I. Answer all the questions.

TYPE - A			TYPE - B		
Q.N0	**ANSWER**		**ANSWER**		**Marks**
1	A	Biotic Potential	B	Denaturation, primer annealing, synthesis	1
2	C	Semi conservative nature of DNA replication	C	Sexual	1
3	C	Both A and R is false	A	N-1 rule	1
4	A	N-1 rule	A	Statement 1 is correct and statement 2 is incorrect	1
5	A	Aspergillus niger	A	Biotic Potential	1
6	C	Sexual	C	Semi conservative nature of DNA replication	1
7	A	Statement 1 is correct and statement 2 is incorrect	A	Aspergillus niger	1
8	B	Denaturation, primer annealing, synthesis	C	Both A and R is false	1

Section – 2

Note : Answer any four question. **4 x 2 = 8**

9 **Mass Extinction** — 1

- The extinction of large number of species within a short period of time is known as **mass extinction**.
- In the 450 million years of life on Earth, there had been **5 mass extinctions**, which had eliminated at least 50% of the species of flora and fauna on the globe.. — 1

10 **Complete parthenogenesis and Incomplete parthenogenesis.** — 2

Complete parthenogenesis	Incomplete Parthenogenesis
Complete parthenogenesis is the only form of reproduction in certain animals and there is no biparental sexual reproduction.	Incomplete parthenogenesis is found in some animal in which both sexual reproduction and parthenogenesis occurs.

11	**Expand a)ZIFT b) ICSI** a)ZIFT - **Z**ygote **I**ntra **F**allopian **T**ransfer b) ICSI – **I**ntra **C**ytoplasmic **S**perm **I**njection	1 1
12	**Two Salient Features of Human Genome Project** • Human genome contains **3 billion nucleotide bases,** • An average gene consists of **3000 bases,** the largest known human gene being **dystrophinwith 2.4 million bases.** (Any 2 points)	2
13	**Homologous organ with Example**: • Structures which are similar in origin perform different functions are called Homologous organs show divergent evolution. • Eg. Darwin‟s finches, Australian Marsupials, locomotion in mammals.	1 1
14	**Pre-pro insulin:** The polypeptide chains are synthesized as a precursor called pre-pro insulin which contains A and B segments linked by a third chain (C) and preceded by a leader sequence	2

Section – 3

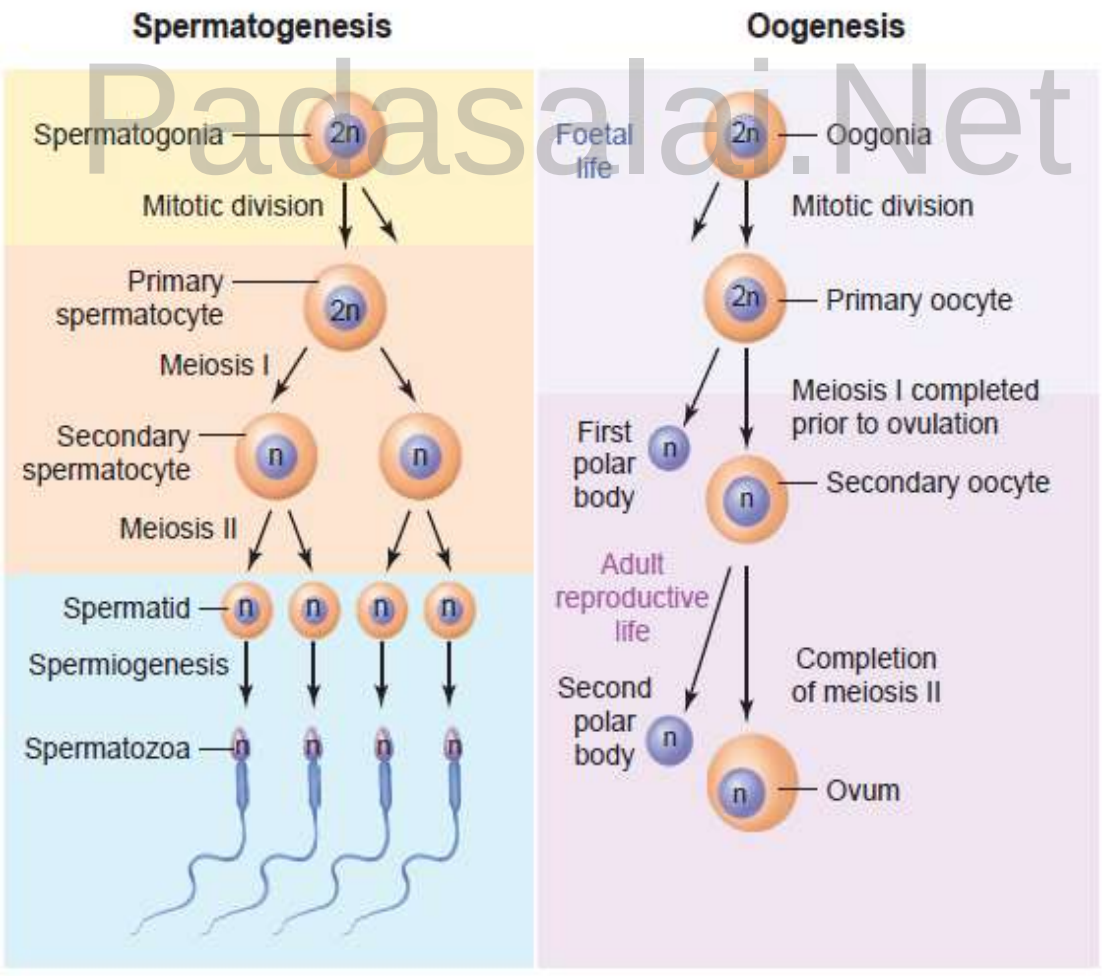
Note : Answer any Three question. Question No: 19 is Compulsory. **3 x 3 = 9**

15	**Inhibin & its function:** • **Sertoli cells** are elongated and pyramidal and provide nourishment to the sperms till maturation. • They also secrete **inhibin**, a hormone which is involved in the negative feedback control of sperm production.	1 1/2 1 1/2
16	**Symptoms of phenylketonuria:** • It is characterized by severe mental retardation, • Light pigmentation of skin and hair. • Phenylpyruvic acid is excreted in the urine.	any 3 3 marks
17	**Two objection of Darwinism** • Darwin failed to explain the mechanism of variation. • *Darwinism explains the survival of the fittest but not the arrival of the fittest.* • He focused on small changing variations that are mostly non-heritable.	(Any 3) 3marks
18	**Adaptations seen in terrestrial animal:** • Earthworms, land Planarians à **secrete a mucus coating to maintain a moist situation** • Arthropods à have an **external covering over the respiratory surfaces** and well- developed tracheal systems. • In vertebrate skin, there are many cellular layers besides the **well**	Any 3 3 marks

	protected respiratory surfaces that help in preventing loss of water.	
19	**Which test highly sensitive and can detect antigens in the range of nanogram? Mention the added advantages it possesses** **ELISA** is the test highly sensitive and can detect antigens in the range of nanogram. **Advantages:** • ELISA is based on the principle of antigen - antibody interaction. • ELISA test can be used in diagnose of AIDS. • ELISA is a tools for determining serum antibody concentrations. • ELISA will help to detect the presence of HIV antigens in the blood • ELISA not requiring radioisotopes or a radiation counting apparatus.	1 any 2 advantages

Section – 4

Note : Answer all the Questions. **2 x 5 = 10**

20 a)	Schematic representation of gametogenesis in humans:  Fig. 2.5 Gametogenesis	5

b) **Differentiate active immunity and passive immunity:** Any 5 point 5 marks

S.No	Active immunity	passive immunity
1	Active immunity is producedactively by host‟ s immune system.	Passive immunity is received passively andthere is no active host participation.
2	It is produced due to contact withpathogen or by its antigen.	It is produced due to antibodies obtained from outside.
3	It is durable and effective in protection.	It is transient and less effective.
4	Immunological memory is present.	No memory.
5	Booster effect on subsequent dose is possible.	Subsequent dose is less effective
6	Immunity is effective only after a short period.	Immunity develops immediately

OR

21 a) **What is the techniques used for settling parental dispute**: 1

DNA fingerprinting is the techniques used for settling parental dispute.

steps involved in this technique 4

1. **Extraction of DNA**
The process of DNA fingerprinting starts with obtaining a sample of DNA from blood, semen, vaginal fluids, hair roots, teeth, bones, etc.
2. **Polymerase chain reaction (PCR)**
In many situations, there is only a small amount of DNA available for DNA fingerprinting. If needed many copies of the DNA can be produced by PCR (DNA amplification).
3. **Fragmenting DNA**
DNA is treated with restriction enzymes which cut the DNA into smaller fragments at specific sites.
4. **Separation of DNA by electrophoresis**
During electrophoresis in an agarose gel, the DNA fragments are separated into bands of different sizes. The bands of separated DNA are sieved out of the gel using a nylon membrane (treated with chemicals that allow for it to break the hydrogen bonds of DNA so there are single strands).
5. **Denaturing DNA**
The DNA on gels is denatured by using alkaline chemicals or by heating.

6. **Blotting**
The DNA band pattern in the gel is transferred to a thin nylon membrane placed over the 'size fractionated DNA strand' by **Southern blotting**.
7. **Using probes to identify specific DNA** A radioactive probe (DNA labeled with a radioactive substance) is added to the DNA bands. The probe attaches by base pairing to those restriction fragments that are complementary to its sequence. The probes can also be prepared by using either 'fluorescent substance' or 'radioactive isotopes'.
8. **Hybridization with probe**
After the probe hybridizes and the excess probe washed off, a photographic film is placed on the membrane containing 'DNA hybrids'.
9. **Exposure on film to make a genetic/DNA Fingerprint**
The radioactive label exposes the film to form an image (image of ds) corresponding to specific DNA bands. The thick and thin dark bands form a pattern of **bars** which constitutes a genetic fingerprint

b) **List all the wastes that you generate, at home, school or during your trips to other places. Could you very easily reduce the generation of these wastes? Which would be difficult or rather impossible to reduce?** — 4

S.No	Place	Waste generated	Mode of reduction
i	Home Kitchen	a) Vegetable/Fruit/Food waste	They can be composted to form manure.
		b) e-waste	a) Reduce usage b) Recycle through e-waste recycling units
		c) Paper waste	a) Recycling units b) Reuse waster paper as much as possible
		d) Used items Cup boards, Old washing machines and old fridge	Recycling units
ii	School	a) Stationary waste/Paper waste	Segregate and sent to recycling unit
		b) e-waste	Recyling units
		c) gardent waste	can be composted
iii	Trips	a) Plastic cups/Water bottles/Plates	❖ Avoid plastic usage ❖ Use ecofriendly plates/cups ❖ Throw waste in garbage dry meant for the same in hotels/trains/puhlic place

Which would be difficult or rather impossible to reduce — 1

- E-waste and Plastic waste are difficult to reduce
- Recycling and disposal of e-waste may involve significant risk to the health of workers and communities in developed countries and great care must be taken to Avoid unsafe exposure in recycling operation and leaking of materials such as heavy metals from landfills and incinerator ashes.
- plastic are low molecular weight organic polymers that are non-

	degradable in the natural environment.	

COMMON PUBLIC EXAM 2025 BIO ZOOLOGY MARK ANALYSIS

CHAPTER /MARKS	1M		2M		3M		5M		TOTAL
BB/INTERIOR	BB	IN	BB	IN	BB	IN	BB	IN	
CHAPTER 1	1			1					3
CHAPTER 2	1				1		1		9
CHAPTER 3	1		1						3
CHAPTER 4		1			1				4
CHAPTER 5	1		1					1	8
CHAPTER 6			1		1				5
CHAPTER 7							1		5
CHAPTER 8	1								1
CHAPTER 9		1		1		1*			6
CHAPTER 10		1			1				4
CHAPTER 11			1						2
CHAPTER 12							1		5
									55

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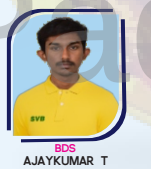

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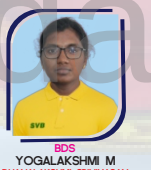

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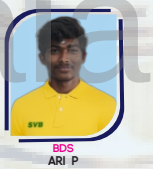

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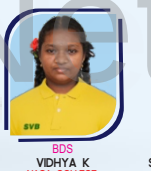

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