SECOND MID-TERM TEST - 2022	Exam No.						
Time : 1-30 Hours	XII - ZOOLOGY						Marks : 50

(PUDUKKOTTAI- DIST) **PART - I** *(10x1=10)*

Note: i) Answer all the questions. ii) Choose the correct answer with option code.

1. Which of the following pair is correctly matched for the product produced by them?
   a) Acetobacter aceti - Antibiotics
   b) Methanobacterium - Lactic acid
   c) Pencilium notatum - Acetic acid
   d) Sacchromyces cervisiae - Ethanol
2. The purpose of biological treatment of waste water is to _____
   a) Reduce BOD
   b) Increase BOD
   c) Reduce sedimentation
   d) Increase sedimentation
3. _____ is also referred as the "queen of drugs"
   a) Streptomycin
   b) Pencillin
   c) Chloromycetin
   d) Erythromycin
4. The first clinical gene therapy was done for the treatment of
   a) AIDS
   b) Cancer
   c) Cystic Fibrosin
   d) SCID
5. GEAC stands for _____
   a) Genome Engineering Action Committee
   b) Ground Environment Action Committee
   c) Genetic Engineering Approval Committee
   d) Genetic and Environment Approval Committee
6. ELISA is mainly used for _____
   a) Detection of mutations
   b) Detection of pathogens
   c) Selecting animals having desired trats
   d) Selecting plants having desired traits
7. _____ is the ability of a single cell to divide and produce all of the differentiated cells in an organism
   a) Multipotency
   b) Tetipotency
   c) Pluripotency
   d) Unipotency
8. Competition between species leads to
   a) Extinction
   b) Mutation
   c) Amensalism
   d) Symbiosis

9. The rule proposed that, "will the increase of every 10°C, the rate of metabolic activity doubles" is
   a) Jordon's rule
   b) Bergman's rule
   c) Van't Hoff's rule
   d) Allen's rule

10. Match the following and choose the correct combination from the options given below.

Column I		Column II
A) Mutualism	-	1) Barnacles attached to whales b
B) Commensalism	-	2) Round worm and man c
C) Paresitism	-	3) Birds compete with squirrels for nuts d
D) Competition	-	4) Sea anemone on hermit crab dispersal a

   a) A-4, B-1, C-2, D-3
   b) A-3, B-4, C-1, D-2
   c) A-2, B-3, C-4, D-1
   d) A-1, B-2, C-3, D-4

PART - II

Note: Answer any six of the following. Question No.12 is compulsory. ***(6x2=12)***

11. Define the following terms.
    a) Zymology b) Superbug
12. What is bioremediation?
13. Write any two industrial benefits of microbes.
14. What does gene therapy mean?
15. Mention any two possible risks of genetically modified organisms.(GMOs)
16. What are interferons?
17. What is Pedogenesis?
18. What is Ethology?

PART - III

Note: Answer any six of the following. Question No.22 is compulsory. ***(6x3=18)***

19. How is milk converted into curd? Explain the process of curd formation.
20. Write short notes on the following.
    a) Brewer's Yeast b) Antibiotics
21. What is Paoteur effect?
22. What are stem cells? Explain its roll in the field of medicine.
23. Differentiate between somatic cell gene therapy and germline gene therapy.
24. What is bioethics?
25. Differentiate Natality and Mortality.
26. What is Acclimatisation?

PART - IV

Note. Answer all the questions. ***(2x5=10)***

27. (a) i) What is referred to as industrial alcohol?
    ii) Write short notes on Biodiesel.

(OR)

(b) Mention the advantages and disadvatages of cloning.

28. (a) i) What are transgenic animals? Give an example.
    ii) What is genetically engineered insulin?

(OR)

(b) Differentiate the following. i) Hibernation and Destivation
ii) Stenotherms and Eurytherms.

HIGHER SECONDARY SECOND YEAR - MID TERM TEST – II - NOVEMBER – 2022
PUDUKKOTTAI DISTRICT.
TENTATIVE SCORING KEY

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

SUBJECT: - ZOOLOGY. **CLASS: 12**

PART-I		10 x 1 = 10
Q. NO	**Answers**	**MARK**
1	d) *Saccharomyces cerevisiae* - Ethanol	1
2	a) Reduce BOD	1
3	b) Pencillin	1
4	d) SCID	1
5	c) Genetic engineering approval committee	1
6	b) Detection of pathogens	1
7	b) Totipotency	1
8	a) Extinction	1
9	c) Van't Holf's Rule	1
10	a) A – 4, B – 1, C – 2, D - 4	1

PART – II – Answer any six of the following questions.

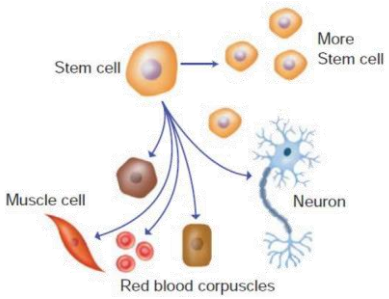
NOTE: Q.NO – 12 IS COMPULSORY (2 Marks) **6 x 2 = 12**

Q.NO	ANSWERS	MARKS
11	**Zymology:** 1. An applied science which deals with the biochemical process of fermentation and its practical uses. **Superbug:** 2. The strains of bacteria that are resistant to the majority of antibiotics commonly used today.	1 1 (Total-2)
12	**Bioremediation:** 1. The use of naturally occurring or genetically engineered microorganisms to reduce or degrade pollutants is called bioremediation.	2 (Total-2)
13	**Industrial benefit of Microbes:** **1.** Products like beverages, antibiotics, organic acids, amino acids, vitamins, biofuels, single cell protein, enzymes, steroids, vaccines, pharmaceutical drugs, etc., are produced in industries. **(Any two)**	(Any two) 1 1 (Total-2)
14	**Gene therapy:** 1. The transfer of a normal gene into a person's cells that carries one or more mutant alleles.	2 (Total-2)
15	**Possible risk of GMOs** 1. Harming non-target species such as soil organisms, non-pest insects, birds and other animals. 2. Disrupting biotic communities including agro ecosystems. 3. Irreparable loss or changes in species diversity or genetic diversity within species. 4. Creating risks for human health.	1 1 (Total-2)
16	**Interferons:** 1. Proteinaceous, antiviral, species specific substances produced by mammalian cells when infected with viruses.	2 (Total-2)

17	**Pedogenesis**: 1. Pedogenesis (soil formation). 2. Soil is formed from rocks which are the parent materials of soil, by weathering and is called embryonic soil.	**1** **1** **(Total-2)**
18	**Ethology:** 1. It is the scientific study of animal behaviour, under natural conditions.	**2** **(Total-2)**

PART – III

NOTE: Q.NO - 22 IS COMPULSORY (3 MARKS) **6 x 3 = 18**

<table>
<tr><th>Q.NO</th><th>ANSWERS</th><th>MARKS</th></tr>
<tr><td>19</td><td>1. The LAB bacteria grow in milk and convert it into curd.
2. Thereby digesting the milk protein casein.
3. A small amount of curd added to fresh milk as a inoculum contains millions of Lactobacilli.
4. Under suitable temperature (≤40^0 C) multiply and convert milk into curd.</td><td>1
1
½
½
(Total 3)</td></tr>
<tr><td>20</td><td>Brewer’s yeast:
1. Saccharomyces cerevisiae commonly called brewer’s yeast.
2. It is used for fermenting malted cereals and fruit juices to produce various alcoholic beverages.</td><td>1 ½
1 ½
(Total 3)</td></tr>
<tr><td>21</td><td>The Pasteur effect:
1. The Pasteur effect is the inhibiting effect of oxygen on the fermentation process.</td><td>3
(Total-3)</td></tr>
<tr><td>22</td><td>What are stem cells? Explain its role in the field of medicine.
1. Stem cells are undifferentiated cells found in most of the multi cellular animals.
Characteristic features of stem cells:
2. Stem cells are capable of self-renewal and exhibit ‘cellular potency’.
3. Stem cells can differentiate into all types of cells that are derived from any of the three germ layers ectoderm, endoderm and mesoderm.
Important and potential application of human stem cells.
4. The generation of cells and tissues that could be used for cell based therapies.
5. Human stem cells could be used to test new drugs.
 
</td><td>5 x ½ = 2 ½
Diagram ½
(Total 3)</td></tr>
<tr><td>23</td><td>Differentiate between Somatic cell gene therapy and Germ line gene therapy.
<table><tr><th></th><th>Somatic Cell Gene Therapy:</th><th>Germ Line Gene Therapy:</th></tr><tr><td>1</td><td>Therapeutic genes transferred into the somatic cells.</td><td>Therapeutic genes transferred into the germ cells.</td></tr><tr><td>2</td><td>Introduction of genes into bone marrow cells, blood cells, skin cells etc.</td><td>Genes introduced into eggs and sperms.</td></tr><tr><td>3</td><td>Will not be inherited in later generations.</td><td>Heritable and passed on to later generations.</td></tr></table></td><td>1
1
1
(Total 3)</td></tr>
<tr><td>24</td><td>Bioethics:
1. The study of the ethical issues emerging from the advances in Biology and medicine.
2. It is also a moral discernment as it relates to the medicalpolicy and practice.</td><td>1 ½
1 ½
(Total 3)</td></tr>
</table>

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Natality and mortality:

	Natality (Population increase):	Mortality (Population decrease):
1	Birth rate	Death rate.
2	Populations increase because of natality.	Population decline factor
3	The production of new individuals in the population by birth, hatching, germination (or) fission	Mortality can be expressed as a loss of individuals in unit time or death rate.
4	Birth rate (b) = $\frac{\text{number of birth per unit time}}{\text{average population}}$	Death rate (d)= $\frac{\text{number of deaths per unit time}}{\text{average population}}$

½ ½ **1 + 1 (Total-3)**

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Acclimatisation:

1. Animals are known to modify their response to environmental changes (stress) in reasonably short time spans.
2. EX: Enhanced RBC count in an individual in higher altitudes.
3. This helps them cope with lower atmospheric oxygen and higher oxygen demand.

1 ½ 1 ½ (Total-3)

PART – IV (5 MARKS) **2 x 5 = 10**

Answer all the questions:

Q.NO	ANSWERS	MARKS
27. (a)	**industrial alcohol:** **1.** *Saccharomyces cerevisiae* is the major producer of ethanol (C_2H_5OH). **2.** It is used for industrial, laboratory and fuel purposes. **3.** So ethanol is referred to as industrial alcohol. **Biodiesel:** **1.** Biodiesel is a fuel made from vegetable oils, fats or greases. **2.** Biodiesel fuel can be used in diesel engines without altering the engine. **3.** Pure biodiesel is non-toxic, biodegradable and produces lower level of air pollutants than petroleum-based diesel fuel. **4.** The Government of India approved the National Policy on Biofuels in December 2009. **5.** *Jatropha curcas* as the most suitable oilseed for biodiesel production. **6.** Pongamia species is also a suitable choice for production of biodiesel.	**2** **6 x ½ = 3** **(Total-5)**
27. (b)	**Advantages of cloning:** 1. Offers benefits for clinical trials and medical research. 2. It can help in the production of proteins and drugs in the field of medicine. 3. Aids stem cell research. 4. Animal cloning could help to save endangered species. 5. Animal and human activists see it as a threat to biodiversity saying that this alters evolution which will have an impact on populations and the ecosystem. **Disadvantages of cloning:** 6. The process is tedious and very expensive. 7. It can cause animals to suffer. 8. Reports show that animal surrogates were manifesting adverse outcomes and cloned animals were affected with disease and have high mortality rate. 9. It might compromise human health through consumption of cloned animal meat. 10. Cloned animals age faster than normal animals and are less healthy than the parent organism as discovered in Dolly. 11. Cloning can lead to occurrence of genetic disorders in animals. 12. More than 90% of cloning attempts fail to produce a viable offspring.	**Any five (Total-5)**

28. (a)	**Transgenic animals.** 1. The animals that are produced by DNA manipulations are called transgenic animals or genetically engineered or genetically modified organisms. 2. **Example: Mice, Cow.** **Genetically engineered Insulin** 1. The insulin synthesized by recombinant DNA technology is called genetically engineered Insulin. 2. It was the first ever pharmaceutical product of DNA technology. 3. In 1986, human insulin was marked under the trade name Humulin.	**1 ½** **1** **1** **1** **½** **(Total-5)**
28. (b)	**Hibernation and aestivation with examples.** 1. Hibernation during winter (winter sleep) 2. **Ex: Polar bears.** 3. Aestivation (summer sleep) to avoid summer related problems like heat and desiccation. 4. **Ex: Some snails and fish**. **Eurytherms and Stenotherms.** **Eurytherms.** 1. Organisms which can survive a wide range of temperature. 2. **Example:** cat, dog, tiger, human. **Stenotherms:** 3. Those organisms which can tolerate only a narrow range of temperature. 4. **Example:** Fish, Frogs, Lizards and Snakes. *Prepared by :* **BHARATHIRAJA A.** **Msc., M.Ed., M.Phil., DOA.** **PGT IN ZOOLOGY** **PUDUKKOTTAI.** **CELL : 9944277623**	**½** **½** **½** **½** **1** **½** **1** **½** **(Total-5)**