

"Education for Knowledge, Science and Culture"

-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

**Vivekanand College, Kolhapur (Autonomous)**

**Department of Zoology**

**Academic Year: 2021-2022**

**Continuous Internal Evaluation (CIE)**

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**Dr. G. K. Sontakke**

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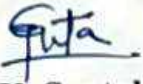
Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

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Date-10/12/2021

**NOTICE**

All the students of B.Sc. II are hereby informed that your open book test of B.Sc. II, Semester III for paper Physiology and Biochemistry is schedule on 15/12/2021. As per the part of continuous internal evaluation attendance is compulsory to all.

  
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**Department of Zoology**

**Academic Year 2021-22**

**Open Book Test- B. Sc. II**

**Name of paper- Physiology and Biochemistry**

**Date: 15/12/2021**

**Marks: 10**

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### **Question Paper**

**Question:** Define Neuron. Explain the structure of neuron

  
**Teacher in charge**



Shri Swami Vivekanand Shikshan Sanstha's  
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Attendance

Date- 15/12/2021

Sr. No.	Roll No	Student Name	Attendance
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2	7302	Alman Adesh Ajit	P
3	7303	Aswale Shravani Popatrao	P
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5	7305	Bharati Arpita Vilas	P
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*G. K. Sontakke*

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**Dr. G. K. Sontakke**  
 Head,  
 Department of Zoology  
 Vivekanand College,  
 Kolhapur (Autonomous)

Date:- 15/12/2021

Marks: 10.

Class: Bsc II

Name: Nalawade Sakshi Sunil

Roll No: 7578

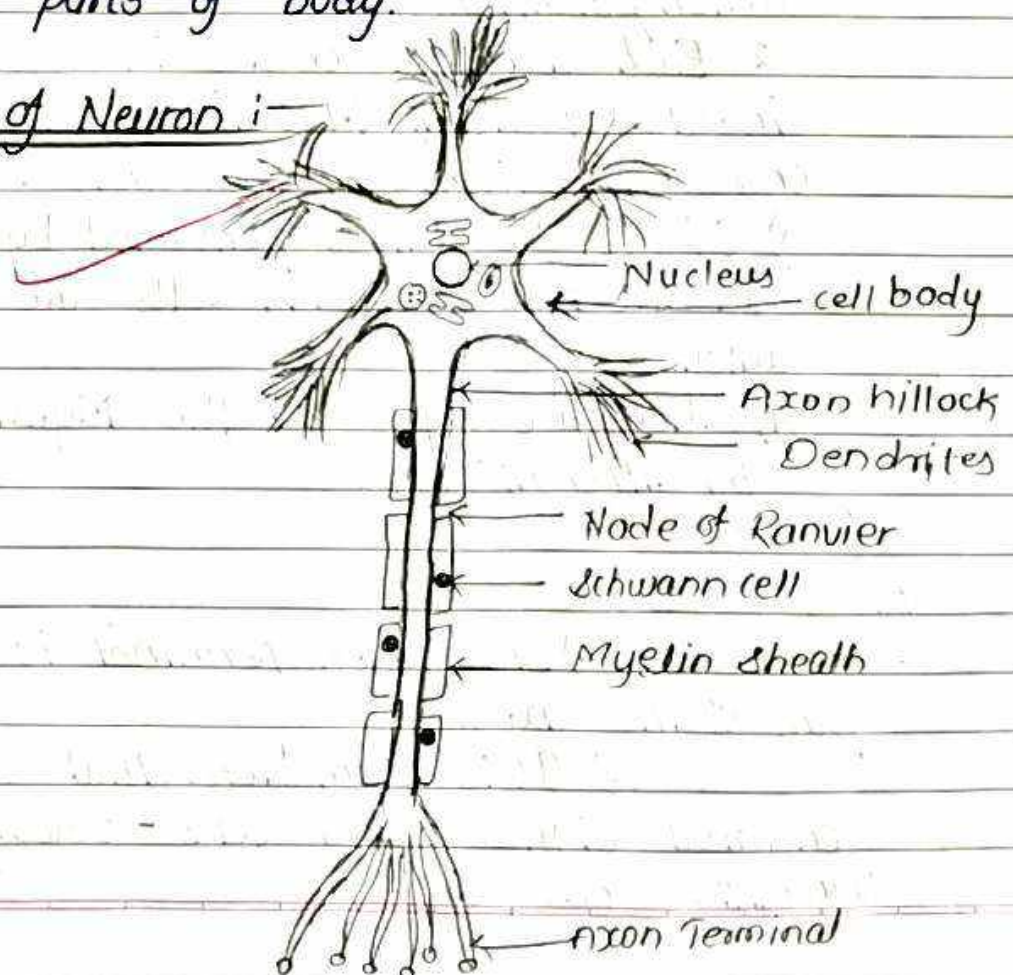
Que. Define Neuron Explain the structure of neuron.

Neuron:-

Nerve cells or neurons are specialized to receive information, encode it and transmit it to other cells. Neurons and their specialized supportive cells called glial cells make up nervous system.

Neurons are the fundamental unit of the nerve system specialized to transmit information of different parts of body.

Structure of Neuron:-





### cell Body :

The cell body holds the nucleus. It is the site of protein synthesis, which occurs on small granules or rough endoplasmic reticulum called rissl substance

In the nervous system, many internal cella bodies can group together.

### Dentrites :

- 1) The Dentrites are elongated partia of the cell body
- 2) They extent outwards, receiving input from the environmental and form other neurovs.

### Axon:

- 1) The Axon is long, thin structure down which action potentioals.
- 2) Each axon is coated in myelin - a layer of insulating lipid. Mycelin is formed by cells crorapping themselves around the nerve axon
- 3) In the CNS this is performed by diagodendrocyte cell. In the PNS, schwann cells are responsible for this action.
- 4) These are gaps betn the Myelin shealts formed by different cells.

### Axon Terminal:

- 1) The axon terminal is the most distal part of the axon.
- 2) It is from here that the neuron sends chemical signals other cells - usually via neurotransmitter release



3) To Facilitate the secretion of neurotransmitter, the axon terminals contain a large number of Mitochondria.

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**Academic Year 2021-22**

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Date-13/12/2021

**NOTICE**

All the students of B.Sc. III are hereby informed that your open book test of B.Sc.III, Semester V for paper Animal Biotechnology is schedule on 20/12/2021. As per the part of continuous internal evaluation attendance is compulsory to all.



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**Academic Year 2021-22**  
**Open Book Test- B. Sc. III**  
**Name of paper- Animal Biotechnology**

**Date: 20/12/2021**

**Marks: 10**

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**Question Paper**

**Question:** Define transcription. Explain the steps involved in eukaryotic transcription



**Teacher In charge**



Shri Swami Vivekanand Shikshan Sanstha's  
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**Attendance**

Date- 20/12/2021

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1	8030	Banadar Juveriya Liyakat	P
2	8031	Chougale Shivani Vilas	P
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9/10

Page No.

Date

## Transcription in PK

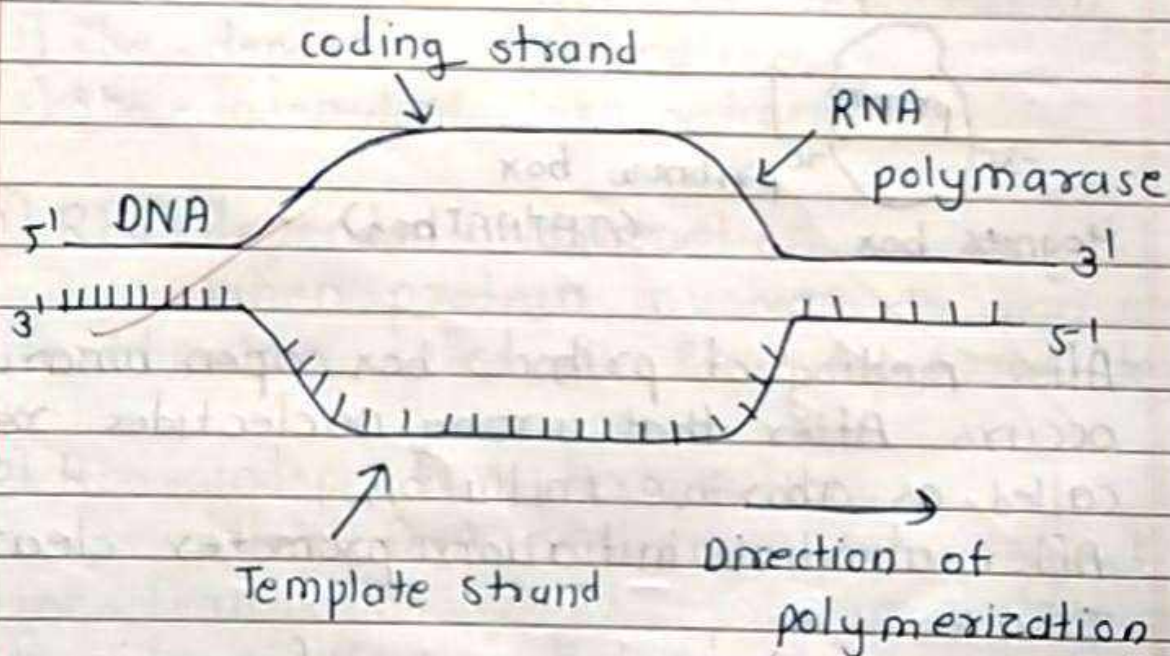
### - Transcription definition

Synthesis of single stranded RNA from double stranded DNA called as transcription.

### - Transcription.

For transcription one strand of DNA require. primer does not require for synthesis RNA polymerase enzyme is required RNA polymerase also called as DNA dependant RNA polymerase.

Direction for synthesis is  $5'$  to  $3'$ . Strand which required for synthesis called templet & other strand called as non templet.



### - Step of transcription

- 1] initiation
- 2] elongation
- 3] termination.



## i) Initiation

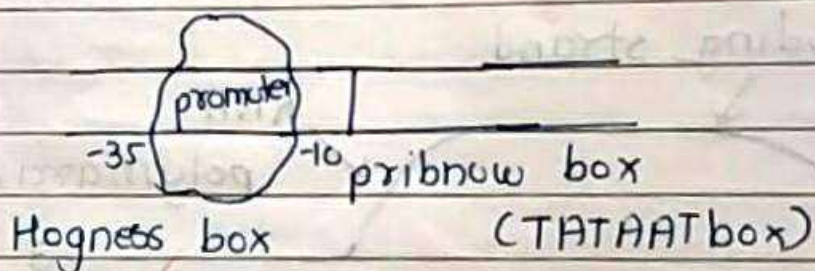
- The transcription is initiated by RNA polymerase. RNA polymerase have units ( $\alpha_2, \beta, \beta', \omega$ ) called core enzyme. ( $\alpha_2, \beta, \beta', \omega, \sigma$ ) called Holo enzymes.  $\sigma$  is important for recognize proper binding.

When Holoenzyme binds from specific point called as promoter sequence.

- When RNA polymerase binds called closed complex.

- Helicase enzymes cut the H bonds, then bubble is form called as transcription bubble.

- When H B opens called as open complex.



- After melting of Pribnow box open binary complex occurs. After that wrong nucleotides removed called as abortive initiation.

- After abortive initiation promoter clearance occurs.

- Then open ternary complex form. in open ternary complex DNA, RNA & RNA polymerase present.

- After that Replacing of  $\sigma$  bond is form.



## 2) Elongation

In Elongation process nucleotides get added. Elongation process is nothing but addition of nucleotides.

Correction of mistake or correction of wrong pair is called proof reading. It occurs in Elongation process.

~~Gamma~~ ~~enzyme~~ is used for repairing / joining of DNA.

## 3) Termination

There are two types of termination

- 1) Rho-dependant termination
- 2) Rho-independant termination

### 1) Rho-dependant termination

When protein involves to stop or termination called as Rho-dependant termination.

### 2) Rho-independant termination

When DNA sequence gives signal to the termination & Rho-protein is not required for termination called as Rho-independant termination.



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**Question Paper**

**Question:** Explain different types of Ponds used in fisheries.

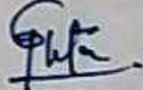
*Gayatri*  
**Teacher In charge**

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**Department of Zoology**  
**Academic Year 2021-22**

Attendance

Date- 20/12/2021

Sr. No	Roll Call	Students Name	Attendance
1	8030	Banadar Juveriya Liyakat	P
2	8031	Chougale Shivani Vilas	P
3	8032	Chougule Sapana Anil	P
4	8033	Desai Shrawani Sudhakar	P
5	8034	Dsouza Priya Motes	P
6	8035	Fakir Juveriya Dastgir	P
7	8036	Falle Nilam Ramchandra	P
8	8037	Ghodke Ganesh Nandakishor	Ab
9	8038	Heble Sanika Prashant	P
10	8039	Jadhav Aarati Sunil	P
11	8040	Jadhav Ankita Raghunath	P
12	8041	Jadhav Shila Thavaru	P
13	8042	Jagtap Shital Bharat	P
14	8043	Kalantre Neha Namdev	P
15	8044	Kalkutaki Vishal Babasaheb	P
16	8045	Kamble Amruta Suresh	P
17	8057	Kawthekar Safia Mohammad Rafiq	P
18	8046	Khot Swapnil Sanjay	P
19	8047	Magdum Pranali Manik	P
20	8048	Mulani Arbaz Yunus	Ab
21	8049	Mullani Saima Dastgir	P
22	8050	Patil Aditi Atul	P
23	8051	Patil Rajvardhini Jaysing	P
24	8052	Sayyad Aarzo Salim	P
25	8053	Shelar Samiksha Umesh	P
26	8054	Yadav Abhilasha Avinash	P
27	8055	Yadav Aditi Sudhir	P
28	8056	Yevaluje Swapnali Madhukar	P

  
**Dr. G. K. Sontakke**  
 Head,  
 Department of Zoology  
 Vivekanand College,  
 Kolhapur (Autonomous)




Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

**Marksheet**

Date- 20/12/2021

Sr. No	Roll Call	Students Name	Marksheet
1	8030	Banadar Juveriya Liyakat	08
2	8031	Chougale Shivani Vilas	07
3	8032	Chougule Sapana Anil	08
4	8033	Desai Shrawani Sudhakar	08
5	8034	Dsouza Priya Motes	08
6	8035	Fakir Juveriya Dastgir	08
7	8036	Falle Nilam Ramchandra	07
8	8037	Ghodke Ganesh Nandakishor	Ab
9	8038	Heble Sanika Prashant	08
10	8039	Jadhav Aarati Sunil	08
11	8040	Jadhav Ankita Raghunath	07
12	8041	Jadhav Shila Thavaru	08
13	8042	Jagtap Shital Bharat	08
14	8043	Kalantre Neha Namdev	08
15	8044	Kalkutaki Vishal Babasaheb	07
16	8045	Kamble Amruta Suresh	08
17	8057	Kawthekar Safia Mohammad Rafiq	08
18	8046	Khot Swapnil Sanjay	08
19	8047	Magdum Pranali Manik	08
20	8048	Mulani Arbaz Yunus	Ab
21	8049	Mullani Saima Dastgir	07
22	8050	Patil Aditi Atul	08
23	8051	Patil Rajvardhini Jaysing	07
24	8052	Sayyad Aarzo Salim	07
25	8053	Shelar Samiksha Umesh	08
26	8054	Yadav Abhilasha Avinash	08
27	8055	Yadav Aditi Sudhir	09
28	8056	Yevaluje Swapnali Madhukar	09

  
**Dr. G. K. Sontakke**  
 Head,  
 Department of Zoology  
 Vivekanand College,  
 Kolhapur (Autonomous)



Name - Shila Jadhav.  
Sub - Zoology.



01098

Signature of Jr. Super.

## विवेकानंद कॉलेज (स्वायत्त) कोल्हापूर.

8/10

परीक्षेच्या

या विषयाच्या प्रयोग परीक्षा

Practical Examination in

at the

Examination

उमेदवाराचा आसन क्रमांक  
(Candidate's Seat No.)

विभाग  
(Section)

उमेदवारांना सूचना

- प्रश्न काळजीपूर्वक वाचा आणि त्याप्रमाणे विचारलेला प्रयोग करा.
- उपकरणांच्या वापराबाबत तुम्हांला काही माहीत नसेल तर परीक्षक किंवा प्रयोगशाळा सहाय्यक यांना तुम्हाला मदत करण्याविषयी विनंती करा.
- कोणताही विद्युत्प्रयोग करण्यापूर्वी, प्रत्यक्ष पुरविलेली सर्व उपकरणे आणि सर्व 'कनेक्शन' नीट पाहून घेऊन संबंधित कामाची नीटनेटकी कार्ययोजना करण्याची नितांत आवश्यकता आहे आणि ह्या नंतर, पुढे काम चालू करण्याविषयी परीक्षकांची परवानगी मिळविणे आवश्यक आहे.
- सर्व निरीक्षणे कोष्टकवजा तक्त्यात भरावी, मधल्या सर्व गणना आणि निर्णय हे शक्य तितक्या सुवाच्यपणे आणि स्पष्टपणे नोंदविलेले असणे हे हितावह आहे.
- प्रारंभिक किंवा अंतिम निरीक्षणात संख्यावाचक आकडे एकावर एक लिहू नयेत. जर लिहिलेला कोणताही आकडा नको असेल तर त्यावर एक रेष ओढून पाहिजे असलेला आकडा त्याच्याजवळ लिहा.
- प्रयोगशाळेतून बाहेर पडण्यापूर्वी आपले टेबल चांगल्या स्थितीत आहे याची खात्री करा.

### INSTRUCTIONS TO CANDIDATES

- Read the question carefully and perform the experiment as required.
- If there be anything the apparatus that you do not know, ask the examiner or the laboratory assistant to help you.
- Before doing any electrical experiment, it is absolutely essential that you make a neat working sketch of all apparatus actually provided and of the necessary connection, and obtain the examiner's permission to proceed.
- Express all observations in a tabular form.
- It is also desirable that all intermediate calculations and results should be entered as neatly and clearly as possible.
- No numerical figures should be written over either in the preliminary or final observations. If any figure is thought to be discarded it should be run through and the desired figure written near to it.
- Please see that your table is in good order before you leave the laboratory.

(येथून लेखनास सुरवात करा.) (Begin writing here.)

a: Explain different types of ponds, use in fisheries.  
→ Within fish farming pond system there can be different pond components namely nursery, rearing, production, segregation and breeding or spawning ponds.  
Nursery ponds are shallow, within the others are moderately deep.



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	Mark																		

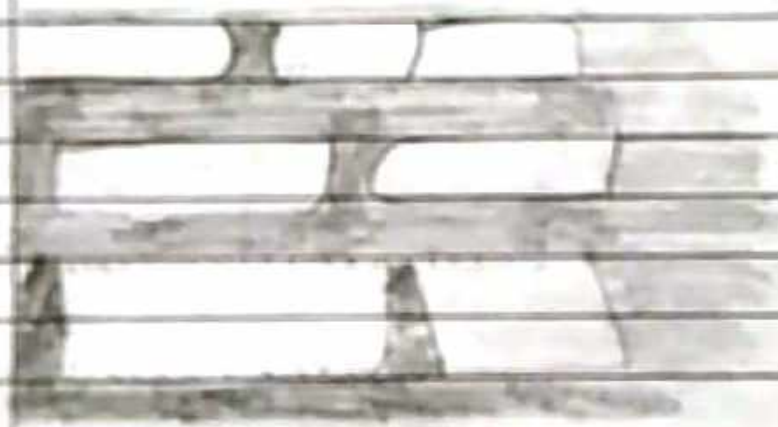
Q No.

Q No.

Types of Ponds - Three basic pond types:

① Sunken pond -

1. The pond floor is below the level of the surrounding land.
2. The pond is directly fed by groundwater or rainfall. It cannot be normally filled by pumping.
3. The sunken pond is undrainable or only partially drainable.



② Barrage pond -

- ① They are created in the bottom of valley by building a dam across the lower end of the valley. They may be built in a series down the valley.
2. The barrage pond is drainable through the old river bed.
3. If large floods are present, the excess water is normally diverted around one side of the pond to keep the level in



Section	Q. No.												
	Marks												

the pond constant. A diversion canal is built for this purpose, the pond water supply is then controlled through a structure called the water intake.

④ Directly fed from a nearby spring, stream or reservoir, the water enters the pond at a point called the inlet and it flows out at a point called the outlet.

⑤ To protect the dike from floods, a spill way should be built.

③ Divergent pond -

① The diversion pond is fed indirectly by gravity or pumping through a diversion canal from a spring, stream, lake or reservoir. the water flow is controlled through a water intake. there is an inlet and an outlet for each pond.

② The diversion pond can be constructed, either on sloping ground as a cut-and-fill pond or on flat ground as a four-dike embankment pond sometimes called a paddy pond.

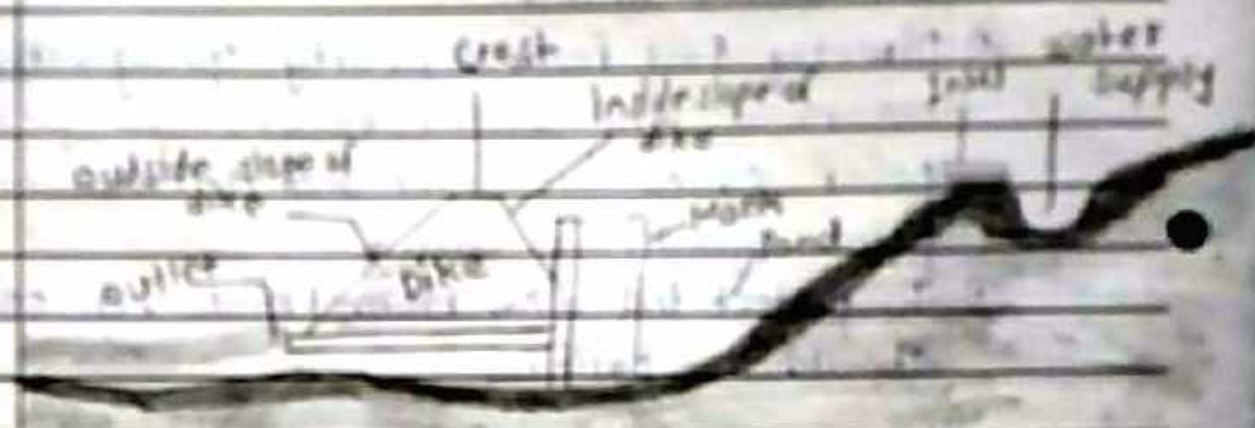
③ It is usually drainable through a drainable canal.



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	Marks																		

Q No.

## Q: Structure of Dyke.



- ① By using concrete blocks, stones or bricks the earthen dykes will be protected more permanently from crab or rat holes.
- ② A typical embankment is built with an outside slope of 1:2 and an inside slope of 1:2.
- ③ A slope of 1:2 means that for every increase in 2m width there is a change of 1m in height.
- ④ Once the embankment is constructed, it is better to plant grass on it.
- ⑤ The upper part of the dyke is called crest.
- ⑥ The grass roots help to hold the wall together and prevent erosion of the soil.

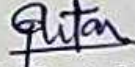
Vivekanand College, Kolhapur (Autonomous)  
Department of Zoology  
Academic year 2021-22

---

Date: 20/12/2021

**NOTICE**

All the students of B. Sc. Part – III are hereby informed that your open book test of B. Sc. Part III, Semester –V for Applied zoology is scheduled on 23/12/2021 at 12.15 to 1.00.p.m. As per the part of internal evaluation attendance is compulsory to all.

  
**Dr. G. K. Sontakke**  
Head,  
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Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur(Autonomous)**

Department of Zoology  
Academic Year 2021-2022

Open book Test  
B.Sc. III

Name of the paper-APPLIED ZOOLOGY

Date -23/12/2021

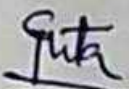
Time – 12.15 to 1.00pm

Total marks-10

---

**Question Paper**

**Question-** Define parasite. Write a note on types of parasites.

  
Class Teacher  
Head,  
Department of Zoology  
Vivekanand College,  
Kolhapur (Autonomous)

Department of Zoology

B.Sc. III sem. V

Date: 23/12/2021

Open Book Test

Paper NO: Applied zoology

Sr. No	Name of the student	Signature
1.	Swapnali Madhukar Yevaluje	<u>Swapnali</u>
2.	Rajvardhini Jaysing Patil.	<u>R Patil</u>
3.	Shital Bhaeat Jagtap	<u>S B Jagtap</u>
4.	Shivani vilas chougale	<u>Shivani</u>
5.	Amruta Suresh Kamble	<u>Amruta</u>
7.	Pranali Manik Magdum	<u>Pranali</u>
8.	Shila Thavaru Jadhav	<u>Shila</u>
9	Sanika Prashant Heble	<u>Sanika</u>
10	Juveriya Liyakat Banadar	<u>Juveriya</u>
11	Shrawani Suchakar Desai	<u>Shrawani</u>
12	Samiksha Umesh Shelar	<u>Samiksha</u>
13	Aarati Sunil Jadhav.	<u>Aarati</u>
14	Nilam Ramchandra Falle.	<u>Nilam</u>
15	Ankita Raghunath Jadhav	<u>Ankita</u>
16	Neha Namdev Kalantre	<u>Neha</u>
17	Abhilasha Avinash Yadav	<u>Abhilasha</u>
18	Aditi S. Yadav.	<u>Aditi</u>
19	Ambar. Yunus mulani	<u>Ambar</u>
20	Swapnil sanjay Khot	<u>Swapnil</u>

Dr. G. K. Sontakke



Shri Swami Vivekananda Education Society's  
Vivekananda College, Kuthapuzha (Autonomous)  
Department of Zoology  
Academic Year 2021-2022  
OPEN BOOK TEST MARK-LIST  
R.No. 03  
Name of the paper-APPLIED ZOOLOGY

Date 23/12/2021

No. No.	Roll no.	Name of the student	Marks (Out of 10)
1	W010	Dhanu/Anurag/Anurag	08
2	W011	Chengath/Divya Viji	08
3	W012	Chengath/Sapana Anil	AD
4	W013	Dhanu/Manoj/Anurag	08
5	W014	Dhanu/Piya Madhu	AD
6	W015	Fajar/Aravind/Anurag	AD
7	W016	Fajar/Anil/Anurag	09
8	W017	Chacko/Anish/Manoj	AD
9	W018	Fajar/Anish/Anurag	08
10	W019	Jeevan/Anish/Anurag	08
11	W020	Jeevan/Anish/Anurag	08
12	W021	Jeevan/Anish/Anurag	09
13	W022	Jeevan/Anish/Anurag	09
14	W023	Kalish/Anish/Anurag	09
15	W024	Kalish/Anish/Anurag	08
16	W025	Kalish/Anish/Anurag	09
17	W026	Kalish/Anish/Anurag	AD
18	W027	Kalish/Anish/Anurag	09
19	W028	Kalish/Anish/Anurag	10
20	W029	Kalish/Anish/Anurag	08
21	W030	Kalish/Anish/Anurag	AD
22	W031	Kalish/Anish/Anurag	AD
23	W032	Kalish/Anish/Anurag	08
24	W033	Kalish/Anish/Anurag	AD
25	W034	Kalish/Anish/Anurag	08
26	W035	Kalish/Anish/Anurag	09
27	W036	Kalish/Anish/Anurag	09
28	W037	Kalish/Anish/Anurag	08

  
Head  
Department of Zoology  
Vivekananda College,  
Kuthapuzha (Autonomous)



Vivekanand College, Kolhapur

Name: Shrawani Suchakar Desai

Class: B.Sc III

Subject: Zoology, Open book test

Date: 23/12/2021

Q. Define Parasite. Write down types of parasite in detail.

→

- Parasite

Parasite are those which live on other organism and gets its food from or at the expense of its host

The word Parasite is derived from a greek word Para- besides and sitas- food.

Eg:- Ascaris (Parasite) in Man (host)

- Types of Parasite

A] According to duration of time of the parasite on the host

i] Temporary Parasite

These are those parasite which lead free life during a part of the life cycle. or in other words, are those which visit the host time to time but do not remain all the time with their host

eg:- Fleas, flies etc

2] Permanent parasite

These parasite which remain with the host all the time and do not leave it at any time

eg:- Lice



### 8] Periodic Parasites.

These are also called as sporadic parasite. These parasite which make short visit to their host to obtain nourishment or food or other benefits  
eg:- Mosquitoes

### B] According to the Habitat of the parasite on/in the host

#### i] Ectoparasite or External parasite

Parasite which are found on the surface of the body of host, usually attached to the skin, feathers, hair, gills etc  
eg:- Lice, flea, ticks

#### 2] Endoparasites or Internal parasite

It is also called endozoa.

Parasite which are found inside the body cavity lungs or other tissue

eg:- helminthes protozoans

- These are of four types

#### i] Intracellular parasite

Endoparasites found in inside the cells of the host  
eg:- Plasmodium.

#### ii] Intercellular parasite

Endoparasite found in between the cells or in the cavities or lumen of different organ of host  
eg: Toxocara



### iii) Erratic or aberrant parasite

Endoparasite found in other organs than the normal habit in the host are aberrant parasite

eg:- Fasciola when found in lung, kidney etc

### iv) Incidental Parasite

Endoparasite in a host range in which these usually do not live or found normally

eg:- Ascaris

### v) According to the specificity of the parasite

#### i) Host specific parasite

Parasite whose host range is confined or limited to either one species of the host or closely related species of the host

eg:- *Plasmodium vivax* is specific to human being

#### ii) Non-host specific parasite

These are parasite whose host range is not confined or limited to one species of host and do not show any marked preference for one species or group of related species of host

eg:- *Fasciola gigantica*

### vi) According to the degree of parasitism

#### i) Facultative Parasite

The parasite those which do not absolutely depend on the parasite life but they retain their power



of leading a free living existence  
eg:- maggots of flies

2] Obligatory parasite

These parasite which completely adopted to a parasitic mode of life. They cannot lead free living life and cannot exist without parasitic life

eg:- Filarid

E] According to the pathogenicity

1] Pathogenic parasite

They have the potential to cause much harm damage of tissue and produce clinical diseases in a host

eg:- Haemonchus.

2] Non-pathogenic parasite

They do not cause much harm, damage and do not produce clinical diseases in a host

eg:- Entamoeba coli

E] According to type of host required in life cycle of parasite

1] Homogenous parasite

These parasite live in only one type of host during the course of their normal life cycle

eg:- Coccidia

2] Heterogenous parasite

These parasite live in two or more type of hosts during the course of their normal life cycle

eg:- tapeworms



प्र. क्र.

Q. No.

3] Stenoxenous Parasite

They have a narrow host range

eg:- human malaria

4] Euryxenous Parasite

They have a ~~narrow~~ broad or wide host range

eg:- Trypanosome

6] According to development in the host

1] Proliferous parasite

The Parasite enters the body of the host as one individual and grows, multiplies and eventually produces a number of daughter individual.

Thus the host, who begins with one parasite and finishes with harbouring many

eg:- *Thileria*

2] Non-proliferous parasite

The parasite enters the body of the host as one individual and grows likewise but the daughter individuals do not multiply in the host in whom they are born

eg:- Helminthes

09

10



**Shri Swami Vivekanand Shikshan Sansthas**  
**VIVEKANAND KOLLEGE, KOLHAPUR (AUTONOMOUS)**  
**DEPARTMENT OF ZOOLOGY**  
 Academic Year 2021-22  
 B.Sc. I  
 Question Paper

Q.1

## Multiple Choice Questions

[10]

1. A common trait between tadpole and fish is .....

- a) Scales b) lateral line c) fins d) legs

2. This has cartilaginous endoskeleton.....

- a) Bony fish b) Mollusca c) Dipnoi d) Elasmobranch

3. This fish show dorsal fin modified into sucker....

- a) Neoceratodus b) hippocampus c) Echeneis d) Torpedo

4. This is migratory fish

- a) Ribbon fish b) Carp c) Salmon d) Shark

5. The distinguishing factors between rays and sharks are .....

- a) Type of tail fin b) position of gill slits c) position of mouth d) nature of their scales

6. Type of association between shark and suckerfish .....

- a) Predation b) parasitism c) Commensalism d) symbiosis

7. Placoid scales are found in.....

- a) Paleontological fishes b) lung fish c) bony fish d) Cartilaginous fish

8. This is characteristic feature of fishes

- a) Gills and epidermal scales b) Tail and epidermal scales  
 c) Gills and venous heart d) venous heart and tail

9. The major osmoregulatory organ in fishes is.....

- a) Gills b) Kidney c) Liver d) Stomach

10. Pisciculture is rearing and production of .....

- a) Fishes b) Birds c) Reptiles d) Wool yielding animals

Q.2 General characteristics of reptiles.

[5]



Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

**B. Sc. I**  
**Surprise Test Attendance**


Sr. No.	Roll No	Name of the students	Attendance
1.	6975	Barale Pooja Jyotiram	P
2.	6978	Chavan Archana Mahadev	P
3.	6980	Chopade Ashish David	P
4.	6984	Chougale Pratiksha Jaysing	P
5.	6988	Demanna Shreyashree Shantinath	P
6.	6993	Dudhgaonkar Yash Mukund	P
7.	6992	Dubey Sakshi Rajkumar	P
8.	6994	Gavade Ankita Ramchandra	P
9.	6995	Gavali Nikita Sarjerao	P
10.	6996	Gore Indraje Vitthal	P
11.	6997	Gosavi Pradnya Sakharam	P
12.	6998	Gurav Akanksha Anil	P
13.	6999	Gurav Smita Rajendra	AB
14.	7002	Jadhav Sanika Vijay	P
15.	7006	Kamble Abhishek Kishor	P
16.	7010	Kamble Prathmesh Shrirang	P
17.	7012	Kamble Rohan Bhagwan	P
18.	7023	Koli Mayur Lahu	P
19.	7024	Koli Nikita Uttam	P
20.	7026	Koli Trupti Sanjay	P
21.	7032	Kumbhar Sanika Sanjay	P
22.	7033	Kumbhar Shruti Ramchandra	P
23.	7039	Mahadik Disha Kailas	P
24.	7040	Malavi Janhavi Prakash	P
25.	7041	Mane Aman Pralhad	P
26.	7042	Mane Anuradha Avinash	P
27.	7046	Miraje Manoj Arunkumar	P
28.	7047	Mohite Avadhoot Vijayanand	P
29.	7048	More Sayali Sandeep	P
30.	7055	Parit Sanika Ramchandra	P
31.	7056	Pathrut Ganesh Bhimrao	P
32.	7059	Patil Janhavi Jagdish	P
33.	7060	Patil Neeraj Deepak	P
34.	7071	Pawar Galaxy Sunil	P
35.	7073	Powar Avantika Balaso	P
36.	7074	Puribuva Namrata Ganesh	P
37.	7078	Redekar Gayatri Madan	P
38.	7079	Redekar Siddhika Madan	P
39.	7082	Sadolkar Soham Satish	P
40.	7083	Sanadi Javed Imam	P
41.	7085	Shaikh Naeem Mahamadhanif	P
42.	7086	Shinde Adityaraj Sachin	P
43.	7087	Shinde Samiksha Maruti	P
44.	7088	Shinde Shruti Ravindra	P
45.	7090	Thorat Aishwarya Bhaskar	P
46.	7092	Tope Gayatri Chandrakant	P
47.	7160	Ganap Pradeep Bhimrao	P



48.	7164	Koli Jai Satish	P
49.	7170	Patil Aishwarya Shashikant	P
50.	7173	Patil Sanika Gajanan	AB
51.	7174	Patil Shraddha Dnyandev	AB
52.	7175	Pendhari Yusaira Zahir	P
53.	7177	Salokhe Janhavi Vikrant	AB
54.	7178	Sandugade Pranav Raju	P
55.	7179	Sarpe Supriy Milind	P
56.	7180	Sarvagode Mahima Vikas	P
57.	7181	Shinde Abhay Tatoba	P
58.	7182	Shinde Priyanka Prakash	AB
59.	7184	Yedurkar Koustubh Kishor	P
60.	7185	Angaj Aishwarya Maruti	P
61.	7186	Balekundri Dhanashri Raju	AB
62.	7187	Bhosale Sharayu Pradeep	P
63.	7188	Chandala Vaishnavi Vivek	AB
64.	7189	Chougale Trupti Tukaram	P
65.	7190	Dabholkar Pravarta Abhijit	P
66.	7191	Desai Komal Vijay	AB
67.	7193	Devane Vaishnavi Ramesh	AB
68.	7194	Gawari Sapana Shivaram	AB
69.	7195	Gundanke Srushti Abaso	P
70.	7196	Gurav Atharva Ramesh	AB
71.	7197	Gurav Shivani Vinayak	P
72.	7198	Hande Pallavi Ravindra	P
73.	7199	Harshe Arpita Ashok	AB
74.	7200	Hawal Arpita Sachin	P
75.	7201	Jadhav Milisha Surendra	P
76.	7202	Kalamkar Asavari Anil	P
77.	7204	Kamble Tejaswini Maruti	P
78.	7205	Kandalkar Namrata Anil	P
79.	7206	Kandalkar Shukrani Chandrakant	P
80.	7207	Kashid Snehal Babaso	P
81.	7208	Kesarkar Prachi Chandrakant	P
82.	7209	Khairmode Swarupa Prasad	P
83.	7210	Kharade Yash Vijay	AB
84.	7211	Khot Harshada Pradip	P
85.	7212	Kolekar Ganesh Jagannath	P
86.	7213	Koli Sakshi Dipak	P
87.	7215	Kumbhar Amruta Shrikant	AB
88.	7216	Lole Shriya Prakash	P
89.	7217	Madhale Ashlesha Shivaling	P
90.	7218	Malavi Rahul Gautam	AB
91.	7219	Mulik Mohini Shivaji	P
92.	7220	Mulla Sanovar Salim	P
93.	7221	Padaval Damini Mohan	P
94.	7222	Pardeshi Shrutika Manik	P
95.	7223	Patil Arpita Shivaji	P
96.	7224	Patil Atharva Mangesh	AB
97.	7225	Patil Gayatri Gajanan	P
98.	7226	Patil Pooja Amar	P
99.	7228	Patil Sanika Sanjay	AB
100.	7229	Patil Sanika Shital	P
101.	7230	Patil Smita Lakshman	P
102.	7231	Pisal Vaishnavi Ramesh	AB
103.	7232	Potdar Shefali Satish	P
104.	7233	Powar Rushita Dinkar	P



105.	7234	Sahani Ankita Chotelal	P
106.	7235	Sankpal Sourabh Rajaram	P
107.	7236	Sawant Rohan Ravindra	P
108.	7237	Surgali Shreeshail Mallappa	P
109.	7238	Sutar Kedar Santosh	AB
110.	7240	Thorbole Sanika Prakash	AB
111.	7241	Vadgaonkar Prasad Subhash	P
112.	7242	Vharamble Pranali Shivaji	P
113.	7247	Magar Manasi Amit	AB
114.	7249	Sutar Rutuja Ananda	AB
115.	7250	Shete Swati Shantinath	P
116.	7251	Patil Vaishnavi Dhananjay	P
117.	7252	Patil Shubhada Ganeah	P
118.	7253	Koli Preeti Deepak	P
119.	7254	Bhurke Swara Sachin	P
120.	7255	Waghmare Prithvi Devanand	P
121.	7256	Ghumai Dhiraj Babaso	P
122.	7258	Thombare Ankita Rajendra	AB
123.	7259	Yadav Shrutika Bharat	AB
124.	7260	Awate Prachi Uday	AB
125.	7261	Naik Shivam Vijay	AB
126.	7263	Kapurakar Prathmesh Suresh	P
127.	7264	Koli Pallavi Raju	AB
128.	7265	Desai Tasnim Yunus	P
129.	7266	Chougule Rutuja Balaso	AB
130.	7267	Sonavane Sanika Sanjay	AB
131.	7268	Kamble Somesh Goutam	AB
132.	7269	Chendage Sandhyarani Santosh	P
133.	7270	Kadam Prasad Chandrashekhar	P
134.	7271	Jadhav Abhijeet Amar	P
135.	7272	Lahade Babu Mahadev	P
136.	7274	Bhise Raviraj Nemaji	AB

  
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**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

**B. Sc. I**  
**Surprise Test Marksheet**

Sr. No.	Roll No	Name of the students	Marks (15)
1.	6975	Barale Pooja Jyotiram	06
2.	6978	Chavan Archana Mahadev	10
3.	6980	Chopade Ashish David	01
4.	6984	Chougale Pratiksha Jaysing	10
5.	6988	Demanna Shreyashree Shantinath	10
6.	6993	Dudhgaonkar Yash Mukund	10
7.	6992	Dubey Sakshi Rajkumar	07
8.	6994	Gavade Ankita Ramchandra	10
9.	6995	Gavali Nikita Sarjerao	10
10.	6996	Gore Indraje Vitthal	11
11.	6997	Gosavi Pradnya Sakharam	09
12.	6998	Gurav Akanksha Anil	10
13.	6999	Gurav Smita Rajendra	AB
14.	7002	Jadhav Sanika Vijay	12
15.	7006	Kamble Abhishek Kishor	10
16.	7010	Kamble Prathmesh Shrirang	10
17.	7012	Kamble Rohan Bhagwan	09
18.	7023	Koli Mayur Lahu	10
19.	7024	Koli Nikita Uttam	07
20.	7026	Koli Trupti Sanjay	09
21.	7032	Kumbhar Sanika Sanjay	05
22.	7033	Kumbhar Shruti Ramchandra	06
23.	7039	Mahadik Disha Kailas	08
24.	7040	Malavi Janhavi Prakash	05
25.	7041	Mane Aman Pralhad	07
26.	7042	Mane Anuradha Avinash	10
27.	7046	Miraje Manoj Arunkumar	01
28.	7047	Mohite Avadhoot Vijayanand	10
29.	7048	More Sayali Sandeep	09
30.	7055	Parit Sanika Ramchandra	06
31.	7056	Pathrut Ganesh Bhimrao	07
32.	7059	Patil Janhavi Jagdish	09
33.	7060	Patil Neeraj Deepak	10
34.	7071	Pawar Galaxy Sunil	10
35.	7073	Powar Avantika Balaso	09
36.	7074	Puribuva Namrata Ganesh	06
37.	7078	Redekar Gayatri Madan	10
38.	7079	Redekar Siddhika Madan	09
39.	7082	Sadolkar Soham Satish	08
40.	7083	Sanadi Javed Imam	11
41.	7085	Shaikh Naeem Mahamadhanif	07
42.	7086	Shinde Adityaraj Sachin	08
43.	7087	Shinde Samiksha Maruti	11
44.	7088	Shinde Shruti Ravindra	09
45.	7090	Thorat Aishwarya Bhaskar	08
46.	7092	Tope Gayatri Chandrakant	10
47.	7160	Ganap Pradeep Bhimrao	10



48.	7164	Koli Jai Satish	11
49.	7170	Patil Aishwarya Shashikant	12
50.	7173	Patil Sanika Gajanan	AB
51.	7174	Patil Shraddha Dnyandev	AB
52.	7175	Pendhari Yusaira Zahir	08
53.	7177	Salokhe Janhavi Vikrant	AB
54.	7178	Sandugade Pranav Raju	10
55.	7179	Sarpe Supriy Milind	08
56.	7180	Sarvagode Mahima Vikas	11
57.	7181	Shinde Abhay Tatoba	10
58.	7182	Shinde Priyanka Prakash	AB
59.	7184	Yedurkar Koustubh Kishor	04
60.	7185	Angaj Aishwarya Maruti	11
61.	7186	Balekundri Dhanashri Raju	AB
62.	7187	Bhosale Sharayu Pradeep	10
63.	7188	Chandala Vaishnavi Vivek	AB
64.	7189	Chougale Trupti Tukaram	09
65.	7190	Dabholkar Pravarta Abhijit	09
66.	7191	Desai Komal Vijay	AB
67.	7193	Devane Vaishnavi Ramesh	AB
68.	7194	Gawari Sapana Shivaram	AB
69.	7195	Gundanke Srushti Abaso	07
70.	7196	Gurav Atharva Ramesh	AB
71.	7197	Gurav Shivani Vinayak	07
72.	7198	Hande Pallavi Ravindra	10
73.	7199	Harshe Arpita Ashok	AB
74.	7200	Hawal Arpita Sachin	07
75.	7201	Jadhav Milisha Surendra	09
76.	7202	Kalamkar Asavari Anil	09
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89.	7217	Madhale Ashlesha Shivaling	11
90.	7218	Malavi Rahul Gautam	AB
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104.	7233	Powar Rushita Dinkar	10



105.	7234	Sahani Ankita Chotelal	10
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116.	7251	Patil Vaishnavi Dhananjay	08
117.	7252	Patil Shubhada Ganeah	10
118.	7253	Koli Preeti Deepak	08
119.	7254	Bhurke Swara Sachin	08
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128.	7265	Desai Tasnim Yunus	05
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130.	7267	Sonavane Sanika Sanjay	AB
131.	7268	Kamble Somesh Goutam	AB
132.	7269	Chendage Sandhyarani Santosh	12
133.	7270	Kadam Prasad Chandrashekhar	08
134.	7271	Jadhav Abhijeet Amar	05
135.	7272	Lahade Babu Mahadev	10
136.	7274	Bhise Raviraj Nemaji	AB

  
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Name: Sandhyarani Santosh

He Mcq Test.

Roll No: chendage. Div-13  
7269.

12/15

0	7	0	1	2	0	2	2
D	D	M	M	Y	Y	Y	Y

Q1. Common Trait between Tadpole and Fish is....

- a) scales.
- b) lateral line.
- c) Fins
- d) legs.

→ lateral line.

2. This has cartilagenous endoskeleton....

- a) body Fishes
- b) Mollusca.
- c) Dipnoi
- d) Elasmobranch.

→ Elasmobranch.

3) This Fish show Dorsal Fin modified into ...  
suckers ....

- a) ~~Nucoratorolus~~
- b) Hippocampus.
- c) ~~Echeneis~~
- d) ~~torpedo~~

→ Echeneis.

4. This is Migratory Fish....

- a) Ribben Fish
- b) Carp
- c) Salmon
- d) shark.

→ Salmon.

5. The distinguishing Factors between Rays and shark are

- a) type of tail Fin
- b) Position of Gill-slits
- c) Position of mouth
- d) Nature of their scales

→ Position of Mouth.

6. The association between shark and sucker Fish is

- a) ~~Prædation~~
- b) Parasitism
- c) ~~commensalism~~
- d) Symbiosis.

→ commensalism



7. Placoid scales are found in Palantological  
a) Palantological fishes    b) lung fishes.  
c) bony fishes    d) Cartilaginous fishes  
→ bony fishes.

8. This is a characteristic feature of fishes ---  
a) Gills & Epidermal scales    b) Tail & Epidermal scales  
c) Gills & venous heart    d) venous heart & Tail.  
→ Gills & venous heart

9. Major osmoregulatory organ in fishes is ---  
a) Gills    b) kidneys.  
c) liver    d) stomach.  
→ kidneys.

10. Pisci culture is really add & production of ---  
a) Fishes    b) Birds  
c) Reptiles    d) Wool yielding animals.  
→ Fishes.

### Q2 General characteristic of Reptiles.

- 
- 1) These are creeping and burrowing terrestrial animals with scales on their body.
  - 2) They are cold-blooded animals found in most of the warmer regions of the world.
  - 3) Their skin is dry and rough without any glands.
  - 4) Body is divided into head, neck, trunk and tail.
  - 5) Few of these sheds skin as scales on their skin as skin cast.



- 6) Respiration takes place through lungs.
- 7) Skull is monocondylic.
- 8) 2 pairs of (pentadactyl) limbs each bearing claws, snakes are an exception.
- 9) Heart is 3 chambered. However, crocodile have 4 chambered heart.
- 10) Nervous system comprises of 12 pairs of cranial nerves.
- 11) Possess 9 typical cloaca.
- 12) Fertilization is internal.
- 13) They are ureotelic, unicotelic & ammonotelic.  
- e.g. Snake, lizard, Crocodile.



**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

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Date-11/04/2022

**NOTICE**

All the students of B.Sc. III are hereby informed that your Unit test of B.Sc.III, Semester VI for paper Immunology is schedule on 29/04/2022. As per the part of continuous internal evaluation attendance is compulsory to all.



**Dr. G. K. Sontakke**  
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Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**  
**Unit Test- B. Sc. III**  
**Name of paper- Immunology**

**Date: 29/04/2022**

**Marks: 20**

**Question Paper**

**Q. Attempt any one of the following**

- 1) Explain the structure of Antibody in detail
- 2) Write short note on IgG and IgM Antibody

  
**Teacher In charge**



Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

Attendance			Date-29/04/2022
Sr. No	Roll Call	Students Name	Attendance
1	8030	Banadar Juveriya Liyakat	Ab
2	8031	Chougale Shivani Vilas	P
3	8032	Chougule Sapana Anil	P
4	8033	Desai Shrawani Sudhakar	P
5	8034	Dsouza Priya Motes	P
6	8035	Fakir Juveriya Dastgir	P
7	8036	Falle Nilam Ramchandra	P
8	8037	Ghodke Ganesh Nandakishor	P
9	8038	Heble Sanika Prashant	P
10	8039	Jadhav Aarati Sunil	P
11	8040	Jadhav Ankita Raghunath	P
12	8041	Jadhav Shila Thavaru	P
13	8042	Jagtap Shital Bharat	P
14	8043	Kalantre Neha Namdev	P
15	8044	Kalkutaki Vishal Babasaheb	P
16	8045	Kamble Amruta Suresh	P
17	8057	Kawthekar Safia Mohammad Rafiq	P
18	8046	Khot Swapnil Sanjay	P
19	8047	Magdum Pranali Manik	P
20	8048	Mulani Arbaz Yunus	P
21	8049	Mullani Saima Dastgir	P
22	8050	Patil Aditi Atul	P
23	8051	Patil Rajvardhini Jaysing	P
24	8052	Sayyad Aarzo Salim	Ab
25	8053	Shelar Samiksha Umesh	P
26	8054	Yadav Abhilasha Avinash	P
27	8055	Yadav Aditi Sudhir	Ab
28	8056	Yevaluje Swapnali Madhukar	P



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**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

Marksheet			Date-29/04/2022
Sr. No	Roll Call	Students Name	Marksheet (20)
1	8030	Banadar Juveriya Liyakat	Ab
2	8031	Chougale Shivani Vilas	18
3	8032	Chougale Sapana Anil	14
4	8033	Desai Shrawani Sudhakar	12
5	8034	Dsouza Priya Motes	07
6	8035	Fakir Juveriya Dastgir	15
7	8036	Falle Nilam Ramchandra	17
8	8037	Ghodke Ganesh Nandakishor	16
9	8038	Heble Sanika Prashant	20
10	8039	Jadhav Aarati Sunil	08
11	8040	Jadhav Ankita Raghunath	17
12	8041	Jadhav Shila Thavaru	20
13	8042	Jagtap Shital Bharat	13
14	8043	Kalantre Neha Namdev	19
15	8044	Kalkutaki Vishal Babasaheb	16
16	8045	Kamble Amruta Suresh	14
17	8057	Kawthekar Safia Mohammad Rafiq	16
18	8046	Khot Swapnil Sanjay	18
19	8047	Magdum Pranali Manik	16
20	8048	Mulani Arbaz Yunus	07
21	8049	Mullani Saima Dastgir	07
22	8050	Patil Aditi Atul	12
23	8051	Patil Rajvardhini Jaysing	16
24	8052	Sayyad Aarzo Salim	Ab
25	8053	Shelar Samiksha Umesh	15
26	8054	Yadav Abhilasha Avinash	16
27	8055	Yadav Aditi Sudhir	Ab
28	8056	Yevaluje Swapnali Madhukar	12

  
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Shri Swami Vivekanand Shikshan Sanstha's  
**VIVEKANAND COLLEGE (Autonomous), KOLHAPUR**

Class BSC-III Div. \_\_\_\_\_ Roll No. 8033  
Name Shrawani Sudhakar Desai Subject Zoology (Immunology)  
Suppliment No. \_\_\_\_\_ Test / Tutorial No. \_\_\_\_\_

17/20

Question:

- Q1. Explain structure of Antibody in detail — 10M
- Q2. Write short notes on — 10M
- i. IgM
  - ii. IgG

Q1. Explain structure of Antibody in detail

- Antibody
  - Antibody is also called as Immunoglobuling (Ig)
  - - Antibody is a Y shape protein and it reacts when any harmful substance is near them like Antigen, viruses and bacteria

• Structure of Antibody

They belong to Immunoglobuling family (Ig)

i. The structure of Antibody is made up of four peptide chains.

ii. In the structure of Antibody has two identical light chain and two identical heavy chain

iii. Light chain are bound to Heavy chain by disulphide bond and non-covalent interaction of salt bridge, hydrogen bond and hydrophobic interaction to form hetroclimer.



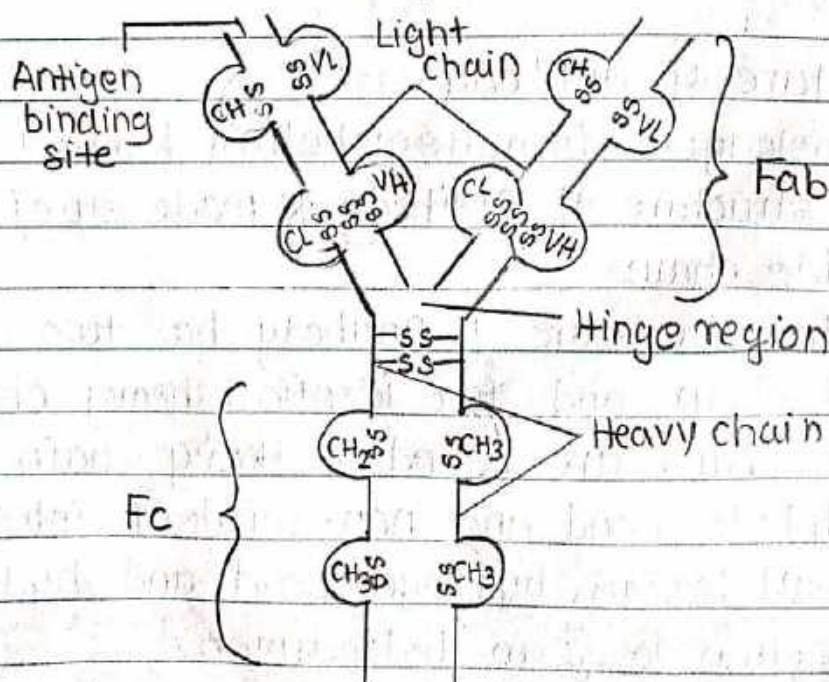
- Light chain (LC)

- In Light chain there are 100-110 amino acids located in the N terminal and these varies in themselves antibodies, so this is called as variable region.
- Remaining 110 are located in C terminal (Carboxyl) and are constant itself Antibodies this is called as Light constant region
- There are two types in light chain, they are Lamda ( $\lambda$ ) and Kappa ( $\kappa$ )

- Heavy chain (HC)

- In heavy chain there 110 amino acids are located in the N terminal (amino terminal) and they varies in the antibodies by themselves, so this is called variable region
- Remaining are in constant region and they divide into five types  
IgG, IgM, IgA, IgD and IgE

- Domain structure of Antibody





- i) The structure of antibody is determined by primary sequence, secondary, tertiary and quaternary organization.
- ii) The primary sequence comprises the constant and variables of light and heavy chain
- iii) The secondary sequence is form by folding to peptide chain in the Beta ( $\beta$ ) and pleated sheets.
- iv) The tertiary is formed by folding of secondary sequence in constant globular domain.
- v) Finally the constant globular domain is adjacent to Light chain and heavy chain they interacts in the quaternary sequence and forms or enable the antigen binding site and also perform biological functions of antibodies side by side.
- vi) In the Light chain they form two domains one in variable region and one in constant region.
- vii) In the Heavy chain only one domain is form and IgG, IgA, IgD have 3 domain, that are CH1, CH2 and CH3 and in IgM, IgE they have 4 domain that are CH1, CH2, CH3 and CH4.

- Fab region

- i) The antigen binding site is form by amino terminal (N-terminal) and effector function by carboxyl terminal (C terminal)
- ii) The antibody bound two Fab and both binds to the antigen.
- iii) Fab is antigen binding site
- iv) Antigen binding site is complementary to epitope of Antibody and this is called complementary Determining Regions (CDRs)



- Fc

- i ~~It~~ Fc region of heavy chain allow immuno complex to interact with phagotic cells.
- ii Many Fc regions exists and it varies the angle to bind antigen binding site.

- Hinge Region

- i ~~It~~  $\delta$ ,  $\gamma$  and  $\alpha$  have extended polypeptide chain from CH1 to CH2 and there is no Homology interacts with domain, so this region is called as hinge Region.
- ii Hinge region is rich in proline residue and is flexible. Therefore IgA, IgD, IgG are flexible
- iii The hinge region is flexible

- Characteristics of Antibodies.

- i ~~It~~ ~~belong~~ is also called as Immunoglobulin
- ii Antibodies are produced by immune system
- iii ~~It~~ is present in B cells (B lymphocytes)
- iv ~~Antigen only bind~~
- iv Antibody binds to specific antigen.

(10)





Shri Swami Vivekanand Shikshan Sanstha's  
**VIVEKANAND COLLEGE (Autonomous), KOLHAPUR**

Class Bsc Ty Div \_\_\_\_\_ Roll No. 8033

Name Shrawani Desai Subject Zoology (Immunology)

Test / Tutorial No. \_\_\_\_\_

IgM

- 1) Heavy chain type -  $\mu$
- 2) Molecular weight - 900,000 Da
- 3) The serum consists of 5 to 10%.
- 4) IgM is large in size that it is called as Millionaire molecule.
- 5) It has pentameric in structure.
- 6) It has 10 binding site but not all 10 binding site bind.
- 7) It is more complementary activation.

4

## IgG

- 1) Heavy chain type - Gamma
- 2) Molecular weight - 150,000 Da
- 3) It is abundant type and it constitutes 80% of serum
- 4) It crosses placenta and helps to protecting the fetus
- 5) There are <sup>3</sup> four types in IgG  
IgG1, IgG2 and IgG3
- 6) It neutralizes viruses

3

7




Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

---

Date-11/04/2022

**NOTICE**

All the students of B.Sc. III are hereby informed that your Unit test of B.Sc.III, Semester VI for paper Ecology and Aquatic Biology is schedule on 30/04/2022. As per the part of continuous internal evaluation attendance is compulsory to all.

  
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**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**  
**Unit Test- B. Sc. III**

**Name of paper- Ecology and Aquatic Biology**

**Date: 30/04/2022**

**Marks: 20**

---

**Question Paper**

**Q. Attempt any one of the following**

- 1) Define Ecological pyramid. Describe types with example
- 2) Describe the biotic and abiotic factor of ecosystem in detail




**Teacher In charge**



Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

Attendance			Date-30/04/2022.
Sr. No	Roll Call	Students Name	Attendance
1	8030	Banadar Juveriya Liyakat	Ab
2	8031	Chougale Shivani Vilas	P
3	8032	Chougule Sapana Anil	P
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5	8034	Dsouza Priya Motes	P
6	8035	Fakir Juveriya Dastgir	Ab
7	8036	Falle Nilam Ramchandra	P
8	8037	Ghodke Ganesh Nandakishor	P
9	8038	Heble Sanika Prashant	P
10	8039	Jadhav Aarati Sunil	Ab
11	8040	Jadhav Ankita Raghunath	P
12	8041	Jadhav Shila Thavaru	P
13	8042	Jagtap Shital Bharat	P
14	8043	Kalantre Neha Namdev	P
15	8044	Kalkutaki Vishal Babasaheb	P
16	8045	Kamble Amruta Suresh	P
17	8057	Kawthekar Safia Mohammad Rafiq	P
18	8046	Khot Swapnil Sanjay	P
19	8047	Magdum Pranali Manik	Ab
20	8048	Mulani Arbaz Yunus	P
21	8049	Mullani Saima Dastgir	P
22	8050	Patil Aditi Atul	P
23	8051	Patil Rajvardhini Jaysing	Ab
24	8052	Sayyad Aarzo Salim	Ab
25	8053	Shelar Samiksha Umesh	P
26	8054	Yadav Abhilasha Avinash	P
27	8055	Yadav Aditi Sudhir	P
28	8056	Yevaluje Swapnali Madhukar	P


  
**Dr. G. K. Sontakke**  
 Head,  
 Department of Zoology  
 Vivekanand College,  
 Kolhapur (Autonomous)

Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur (Autonomous)**  
**Department of Zoology**  
**Academic Year 2021-22**

Marksheet

Date-30/04/2022.

Sr. No	Roll Call	Students Name	Mark (15)
1	8030	Banadar Juveriya Liyakat	Ab
2	8031	Chougale Shivani Vilas	11
3	8032	Chougule Sapana Anil	11
4	8033	Desai Shrawani Sudhakar	13
5	8034	Dsouza Priya Motes	13
6	8035	Fakir Juveriya Dastgir	Ab
7	8036	Falle Nilam Ramchandra	09
8	8037	Ghodke Ganesh Nandakishor	05
9	8038	Heble Sanika Prashant	15
10	8039	Jadhav Aarati Sunil	Ab
11	8040	Jadhav Ankita Raghunath	04
12	8041	Jadhav Shila Thavaru	13
13	8042	Jagtap Shital Bharat	12
14	8043	Kalantre Neha Namdev	15
15	8044	Kalkutaki Vishal Babasaheb	09
16	8045	Kamble Amruta Suresh	09
17	8057	Kawthekar Safia Mohammad Rafiq	11
18	8046	Khot Swapnil Sanjay	04
19	8047	Magdum Pranali Manik	Ab
20	8048	Mulani Arbaz Yunus	03
21	8049	Mullani Saima Dastgir	08
22	8050	Patil Aditi Atul	08
23	8051	Patil Rajvardhini Jaysing	Ab
24	8052	Sayyad Aarzoo Salim	Ab
25	8053	Shelar Samiksha Umesh	12
26	8054	Yadav Abhilasha Avinash	13
27	8055	Yadav Aditi Sudhir	07
28	8056	Yevaluje Swapnali Madhukar	12

  
**Dr. G. K. Sontakke**  
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 Vivekanand College,  
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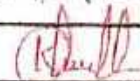


Date 30/04/2022

" ज्ञान, विज्ञान आणि सुरक्षित यांचाही शिक्षण प्रसार "

- शिक्षणमहर्षी डॉ. बापूजी साबुळे

Signature of  
Supervisor





Shri Swami Vivekanand Shikshan Sanstha's  
**VIVEKANAND COLLEGE (Autonomous), KOLHAPUR**

Class B.Sc III

Div \_\_\_\_\_

Roll No. 8033

Name : Shrawani Suchakar Desai Subject Zoology (Ecology and Aquatic Biology)

Test / Tutorial No. \_\_\_\_\_

Q 1. Define Ecological Pyramid? Describe types with examples

→ Ecological Pyramid

Ecological Pyramid means relationship between organism in a graphical representation.

i) Ecological Pyramid have different trophic levels.

ii) In Pyramid each bar has different trophical level, it shows <sup>which</sup> organism eats whom, orders of it in the, flow of energy in that trophical level.

iii) In Ecological pyramid the height of the Pyramid is same but the width of the Pyramid are different on the bases quantity of ee organism present in each bar.

iv) Ecological Pyramid was discovered by Charles Elton in the year 1927.

v) In Ecological Pyramid are of three types

A) Pyramid of Number

B) Pyramid of Biomass

C) Pyramid of Energy



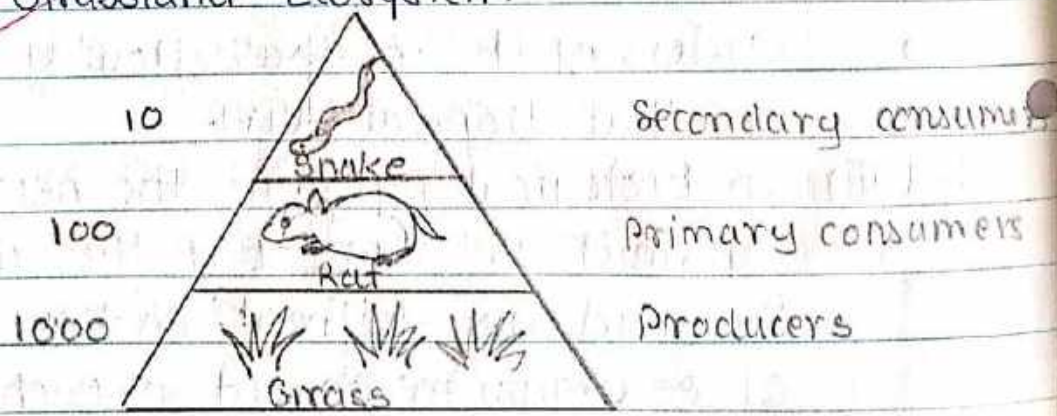
## A] Pyramid of Number

- a] It shows relationship between the organism in each trophic level but in the term of numbers
- b] The number of trophic levels decreases from base to apex
- c] It indicates Number of organism present at each trophic level
- d] In Pyramid of Number there is upright pyramid is there but in some cases inverted pyramid is also there, Detritous food chain they feed on dead organic material

### ① Upright Pyramid

In upright Pyramid the numbers decreases from producers to consumers.

Eg:- Grassland Ecosystem

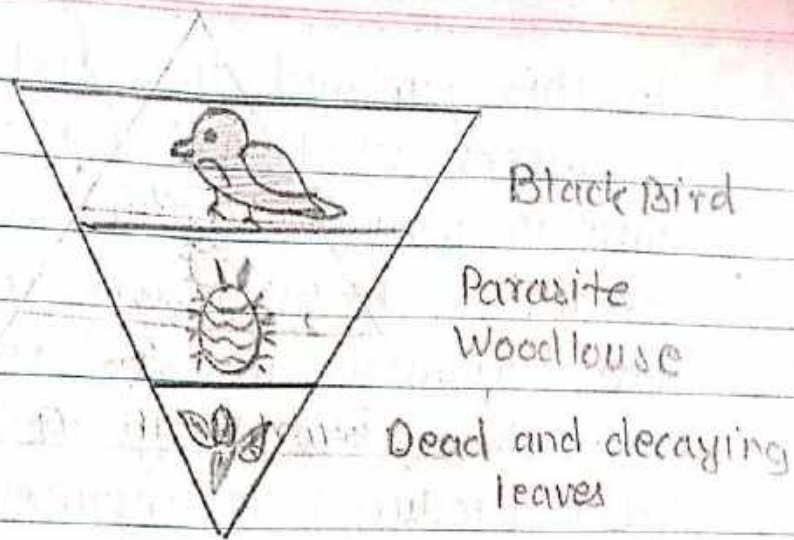


In this ecosystem there are more numbers of grass is present, there Primary consumers are less than Producers and Secondary consumers have are less than Primary consumers

### ② Inverted Pyramid

Eg:- Detritous Food chain





In this pyramid is inverted here consumers are more than producers.

### ② Pyramid of Biomass

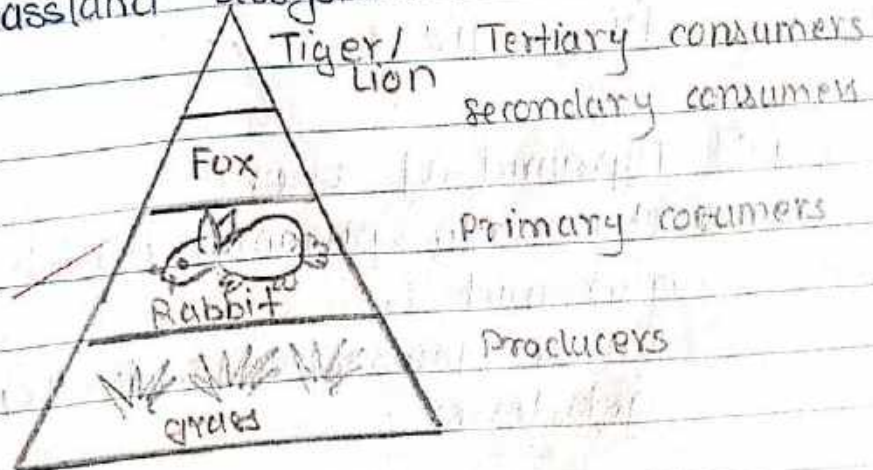
a) Biomass means the total weight of the organism in per unit area is called as pyramid of biomass.

b) The biomass decreases in the pyramid by base to apex

c) In Pyramid of biomass has upright pyramid except in Aquatic ecosystem, large number of zooplankton feed on phytoplankton.

### ① Upright Pyramid

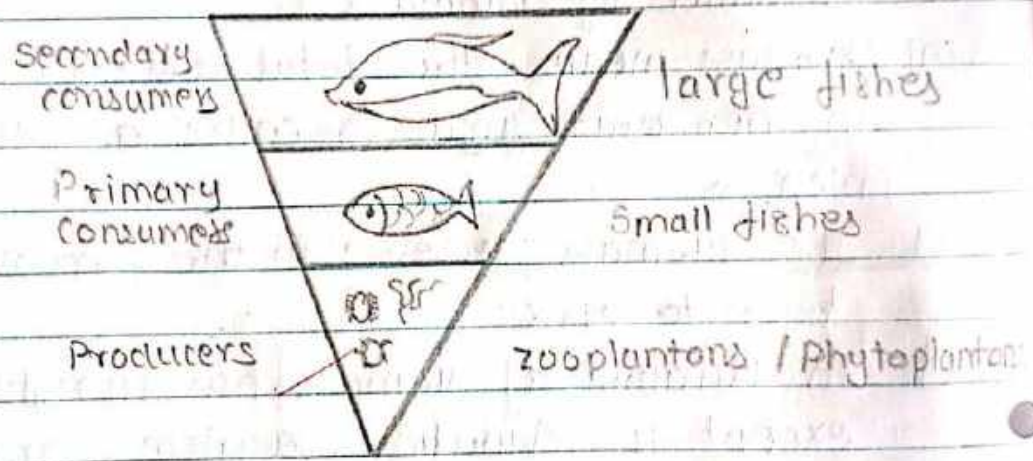
Eg:- Grassland Ecosystem





In this pyramid the first trophic level has producers which has more biomass, second there is primary consumers lesser than producers, Primary Secondary consumers lesser than Primary and Tertiary consumers are lesser than secondary. So the weight decreases from producers to consumers.

② Inverted Pyramid  
Eg:- Aquatic Ecosystem



In this pyramid weight of Producers is ~~more~~ <sup>less</sup> than consumers

Small fishes feed on zooplankton and phytoplankton and then big fishes feed on large fishes

C] Pyramid of Energy

It is only pyramid which is upright pyramid

Energy flow from each trophic level and gets lesser



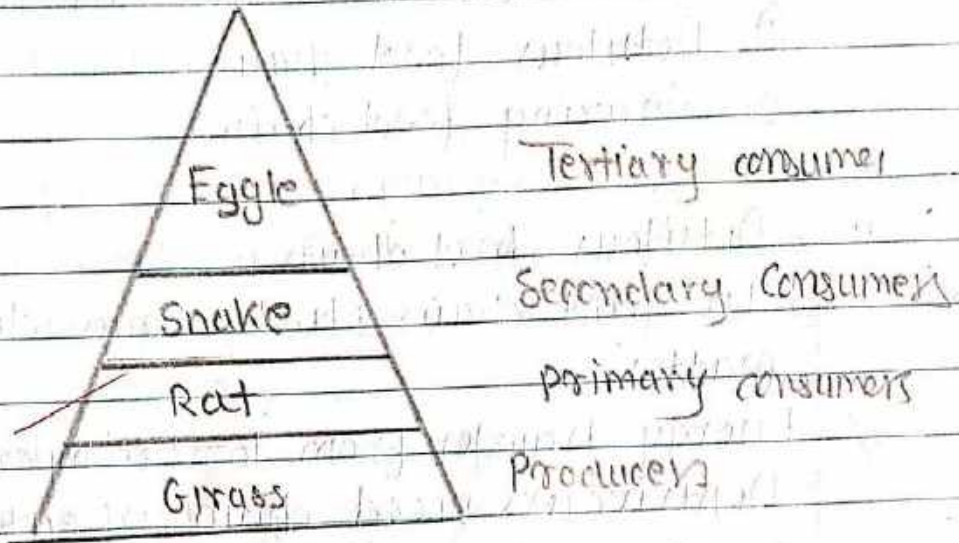


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**VIVEKANAND COLLEGE (Autonomous), KOLHAPUR**

Class B.Sc T.Y Div \_\_\_\_\_ Roll No. 8083

Suppliment No. \_\_\_\_\_ Subject Zoology

Test / Tutorial No. \_\_\_\_\_



Energy is lesser in each tropic level.  
The energy is loss upto 80 to 90% in the  
Pyramid

08



## Food chain

Food Chain means when Organism eats another organism as food for nutrients and energy is called as food chain

In food chain there are two types

- ① Detritous food chain
- ② Grazing food chain

### ① Detritous food chain

This food chain starts from dead organic matter

Energy transfer from to Decomposer and Detritivours food chain. is eaten by carnivores. Small carnivores like maggot is eaten by large carnivores like frog and snakes. Primary consumers feed on Detritous. They have organism like bacteria, fungi and so on.

Dead Decaying ~~leaf~~ → Woodlouse → Black bird.

### ② Grazing Food chain

In this food chain starts from plants and passes through ~~to~~ producers to consumers. It is very important food chain because it is base of all the ecosystem and most of the ecosystem is initiated by grass. Initially plant gets energy from sunlight



The energy gets transferred from autotrophs to herbivores

grass → Rat → Ti- Snake / Frog → Eagle.

Q3

## 11] Grassland Biome

Biome refers to the community of organisms occur naturally in that area and share similar characteristic & specific of that area.

### Grassland Biome

- 1) It is terrestrial type of biome
- 2) The vegetation is grass
- 3) The soil and rainfall are not sufficient for growth of trees
- 4) Climate is hot & in that area and rainfall is very less
- 5) Fire can cause due to semi arid region
- 6) Plants like Buffalo grass and blue gamma grass present
- 7) Animals like Tiger, Fox are there
- 8) Soil is

Q2