UNIT VIII. MAN AND BIOSPHERE

ELEMENTARY ASPECTS OF ECOSYSTEM	• Stratosphere begins from -Tropopause
• All the parts of the earth that are inhabited by	• Ozone shield protects the organisms on the earth
living organisms constitute the - Biosphere	by absorbing -Ultraviolet radiation
• Study of relationships between organisms and their	• In stratosphere as the altitude increases, there is
biotic and physical surroundings is referred to as	increase in -Temperature
- Ecology or Environmental biology	• Part of the atmosphere that extends up to 50 to 500
• Reasons for the loss of ecological balance are	km is -Ionosphere
1) Over exploitation of ecosystems for standing	• Part of the atmosphere in which ions and free
crops	electrons exist to reflect electromagnetic waves
2)Over utilisation of physical resources	is Ionosphara
3)Habitat alteration (1)Habitat destruction	Substances present in ionic state due to the effect
Deals unittee hy Eugene Odum Fundamentale	Substances present in forme state due to the effect
• Book whiten by Eugene Odum-Fundamentals	of ionizing radiation in ionosphere are
	- Oxygen, Nitrogen and Nitric oxide
• The term "Ecology" was first used by Ernst Haeckel	• Telecommunications are possible over long distances
• Ecology is defined as " the study of organisms in	as shorter radio waves are reflected in the layer
relation to surroundings in which they live by	-lonosphere
-Ernst Haeckel	• Parts of ionosphere are mesosphere and
 The word Ecology was derived from the Greek 	thermosphere
word 'OIKOS' meaning habitation or home.	• The layer of the earth's atmosphere that is directly
LOGOS means studies	above the stratosphere and below the thermosphere
• Divisions of ecology: Autecology and	is -Mesosphere
Synecology	• Mesosphere is located above the earths's surface
• Study of interrelationships between individual	between -50 to 80 km
organisms of a nonulation and their environment is	• In ionosphere, as altitude increases, temperature
called - Autecology/Species ecology	- Decreases
 Study of inter relationships between different species 	• The layer of the earth's atmosphere above the
of organisms and their environment is called	mesosphere and directly below the exosphere is
- Synecology / (Feology of communities)	-Thermosphere
The earth and the environment	Ionisation occurs in thermosphere layer due to
Average diameter of the earth is approximately	- Ultraviolet radiation
• Average diameter of the earth is approximately	Fyosphare
-12,742 Kill	Part of atmosphere beyond the ionosphere where
• Physical components of the earth are	etmographeric prospure ig low in Evographere
-atmosphere, hydrosphere and geological layers.	Liquid company of the conthing Hydrogram
• Gaseous envelope surrounding the earth constitutes	• Liquid component of the earth is -Hydrosphere
the -Atmosphere	• /1% of the earth's surface is covered by - Water
• Number of distinct layers in atmosphere is-Four	97% of it is sea water and 3% fresh water.
Four distinct layers are recognised in the	• Geological layers of the earth
atmosphere they are	- Crust, Mantle and core
1) Troposphere 2) Stratosphere	• Geological composition of the earth (below surface)
3) Ionosphere 4) Exosphere	Lithosphere - 0 to 60 km
• The lowest layer closer to the earth's surface upto	Crust - 0 to 35 km
the height of 8 to 10 km above the earth surface at	• Uppermost part of
poles and 16 to 18 km at the equator is	mantle - 35 to 2900 km
-Troposphere	Asthenosphere - 100 to 700 km
• The pressure and temperature of the air decrease	Outer core - 2900 to 5100 km
gradually as -Height increases from	Inner core - 5100 to 6378 km
earth's surface	• A product of mantle melting is
• The densest and the most turbulent layer with	- The Crust (35 Km thick)
atmospheric phenomena is -Troposphere	• Thin Oceanic crust is composed of- Dense Iron
• 75% of mass of the atmosphere is present in	& Magnesium Silicate Rocks.
-Troposphere	Thick continental crust is less densed and composed
• Temperature at tropopause is $-57^{\circ}C$	of -Sodium. Potassium and Aluminium Silicate
Stratosphere begins from _Tranopause	Rocks
The average atmospheric prospins on the surface	Habitat for a richvariety of organisms is Crust
• The average autospheric pressure on the sufface	- Hubitat for a Henvariety of organishis is - Clust
Dert of otmoorhore that extends wets 50, 55 law	
• Fart of aumosphere that extends upto 50 -55 km	
above the earth's surface is -stratosphere	

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Stratosphere contains

-Ozone shield

- 70% of earth's volume is occupied by Mantle
- Upper most layer of mantle just below the crust is composed of relatively cooled and strong material Lithosphere is-
- Mantle contain.compared to crust is Higher portion of iron and magnesium and smaller portion of silicon and aluminium
- Temperatue of mantle from top to bottom is

 $100^{\circ} C to 4000^{\circ} C$

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CORE

- The region of mantle extending below the lithosphere that cools by convection is called - Asthenosphere
- Part of the earth that starts from 2900 km beneath the surface and extends downward is - The Core
- Temperature of inner core - 6300 °C
- Radius of inner core - 1278 km
- Temperature of outer core is - 4000 o C
- Radius of outercore is -3478km
- Inner core is composed of iron and some nickel in the form of -Crvstal
- Outer core is composed of Molten iron with molten nickel and traces of lighter elements **ENVIRONMENT**
- Sum total of all biotic and abiotic factors surround the organism is -Environment
- The temperature, pressure, humidity, rainfall, sunshine, cloud cover and wind at a given place and time constitutes - Weather
- The average weather of an area over a long period of constitutes is -Climate
- Climate of an area is mainly determined by temperature and rainfall
- Distribution of living orgamisms is influenced by the - Climatic patterns

Children Zones are

Tropical Subtropical	-	0° to 20° 20° to 40	latitude latitude
Temperate	-	- 40° to 60°	latitude
Polar	-	$60^{\circ} to 80^{\circ}$	latitude

Climate that prevails in the immediate surrounding of plants and animals is - Micro climate.

- In dense forests amount of light reaching the ground is reduced by -Foliage.
- The place where organisms live is the -Habitat
- Physical and abiotic factors that determine the environment in which an organism lives are -Light, Temperature and Moisture.
- Functional role of an organism in an ecosystem is called -**Ecological Niche** HIERARCHY AMONG THE LIVING
- **ORGANISMS:** Basic unit of study in ecology - Organism
- A group of organisms of a single species living in a particular are a **Population**
- Eg: Frogs of the species Rana tigrina in a pond Slipper animalcules of sps Paramoecium
- caudatum in a pond, Deer of the species Axis axis in a forest
- Assemblage of the populations of different species of micro organisms, plants and animals living in a

given habitat is -

Biotic community

different population like, plants, deers tigers, snakes beetles, worms together constitute

- Wood land comunity.

ECOSYSTEM The self sustained unit that is composed of biotic community integrated with physical environment through the transfer of energy and recycling of nutrients is -Ecosystem Unit of land having a mosaic of ecosystems surrounded by natural boundaries - Land scape. The term Ecosystem is coined by - Tansley The total lifesupporting environment is called -**Biosphere** (or Ecosphere) A biotic community in a large area living in particular climatic condition constitutes - Biome Ex: Grass Land, or coniferous forest Tundra is the Biome of - Arctic region Taigas is the Biome of -**Temperate region** Rain forest is the Biome of - Tropical region Structural components of ecosystem are abiotic & biotic components. Functional aspects of an ecosystem include- Flow of energy through ecosystem & recycling of nutrients with in the system. Abiotic and biotic components are linked with - Flow of energy through ecosystem & recycling of nutrients with in the system. Flow of energy or recyclins of materials are essential for - a community and physical environment Abiotic physical factors -Temperature, rainfall, light, pressure, solar radiation, geomagnetism, types of soil Abiotic chemical factors - Salinity. acidity. alkanity. necessary inorganic nutrients. All living organisms in an ecosystem constitute - Biotic factors. Biotic factors are - Producers, consumers, decomposeres **8.2 ECOSYSTEM : ABIOTIC FACTORS** Penetration of light in the forest is affected by -The foliage of the plants. Shade loving plants that live under the shade of trees are - Seiophytes LEVEL-I 1. Relationship between living organisms and their environment is studied under 1) Systematics 2)Biogeography 3)Ecology 4)Biology 2. Interrelation between populations and their environment is 1) Synecology 2)Autecology 3) Population study 4) Hydrology 3. Synecology refers to inter-relation of environment with 1)Communities 2) Populations 3) Single individual 4) Single species 4. The gaseous envelope surrounding the earth is called

1)Atmosphere

3) Lithosphere

2) Hydrosphere

4) Hygrosphere

5.	The densest and most tu	rbulent layer	19.	The three layers of lithosp	ohere are
	with atmospheric phenor	nena is		1) Stratosphere, Trophos	phere, Exosphere.
	1)Stratosphere	2)Troposphere		2) Crust, Mantle, Tropho	sphere, Exosphere
	3)Ionosphere	4)Exosphere		3) Crust, Mantle, Core	
6.	The layer of atmosphere	e extending up to 8-10 km		4) Ionosphere, Hydrosph	nere, Troposphere
	at the poles, from the su	urface of Earth	20.	The diameter of earth is a	about
	1) Stratosphere	2) Ionosphere		1) 6378 2) 3478 3) 12	2,742 4) 5100
_	3) Troposphere	4) Exosphere	21.	Liquid component of the	earth
7.	The layer which is enric	ned with ozone is.		1) Lithosphere	2)Atmosphere
	1) Tropnosphere	2) Ionosphere		3) Hydrosphere	4) Biosphere
8	The layer of atmosphere	which extends from 50 to	22.	The layer of lithosphere th	nat contains rocks, iron and
0.	55 km height	which extends from 50 to		Magnesium and smaller	r portionof silicon
	1) Stratosphere	2) Ionosphere		1) Crust	2) Mantle
	3) Troposphere	4) Exosphere		3) Core	4) Ecosphere
9	The layer which extends	about 50-55 km and is rich	23.	Asthenosphere is	
۶.	in ozone gas			1) The surface layer of th	e soil
	1) Ionosphere	2) Stratosphere		2) A region of mantle	
	3) Troposphere	4) Exosphere		3)outer core	4)Inner core
10	Which of the following r	reflects short radio	24.	The layer of lithosphere the	hat contains high tempera-
10.	waves and making teleco	mmunications		ture and molten Iron an	nd Nickel
	possible between distant	places.		1) Crust	2) Mantle
	1) Stratosphere	2) Ionosphere		3) Outer Core	4) Inner Core
	3) Troposphere	4) Exosphere	25.	Identify the layer of lithos	phere which is in a gaseous
11.	The altitude from which	stratosphere begins is		or fluid state.	
	1)Stratosphere 2)Trop	osphere		1) Core	2) Mantle
	3) Ionosphere 4) Meso	osphere		3) Crust	4) Ionosphere
12.	Thermosphere and Mes	ophere are part of	26.	The layer of lithosphere	which contains crystalline
	1) Troposphere	2) Exosphere		iron	
	3) Ionosphere	4) Stratosphere		1) Crust	2) Mantle
13.	Identify the layer where t	he atmospheric		3) Outer Core	4) Inner Core
	pressure is very low		27.	The inner most layer of lit	thosphere
	1) Stratosphere 2) los	nosphere		1)Crust	2) Mantle
	3) Troposphere 4) Ex	tosphere		3) Core	4) Exosphere
14.	Identify the layer of atmo	sphere which is con	28.	Shade loving plants are	
	sidered as the outer space	e		1) Seiophytes	2) Mesophytes
	1) Ionosphere 2) St	ratosphere	•	3) Xerophytes	4)Hydrophytes
1.5	3) Iroposphere 4) Ex	tosphere	29.	The functional role of an	organism
15.	The term ecosystem wa	as coined by		1) Niche 2) Hat	oitat
	1) Reiter 2) Haeckel		20	3) Biosphere 4) Bios	phere reserves
16	3) Tansley 4) Lankaster		30.	The treeless ground in the	e arctic region.
10.	Ponds, lakes and tanks co	onstitute		1) Taiga	2) Grass land
	1) Lotic waters 2) Let 2) Let 2) Let 2	entic waters	21	3) Rain forests	4) lundra
17	3) Littoral water 4) Be		31.	All communities occurrin	ig together in a habitat hav-
1/.	Oceans, Lakes, Rivers, S	treams, Polar ice caps and		ing specific climatic con	ditions form
	1) A two such and 2) St			1) Population	2) Ecosystem
	2) Lithographic (1) Lit	atosphere	22	5) Blome	4) N1cne
10	The layer status and an	where O2 and nituin and 1	32.	I ne living organisms of a	nabitat having specific cli-
18.	i ne layer otatmo sphere	where 02 and nitricoxide		matic conditions forms	
	are in ionic state	vagnhara		1) Population	2) Community
	3) Jonosphere (4) St	rosphere	22	5) Blome	4) Ecosystem
	3) tonosphere 4) St	latospilete	33.	1 ne coniferous forests in	une temperate region is
				1) Tunura 2) Dain fareat	2) Taiga
			•	5) Kain iorest	+) Estuarine forest

34.	Treeless an	nd perm	anently	frozen g	ground pr	esent near		3.	ü	i	ii	v	
	arctic reg	gion						4.	iv	i	v	ï	
	1) Tundras	5		2) Par	npas		45.	(A):Li	fe exists	on plan	et earth	only	
	3) Igloo			4) Tai	ga			(R) : Ea	urth is the	e only p	lanet w	hich re	cevies the
35.	In a biotic	comm	unity, th	e specie	es that a	re present	solar energy.						
	in large numbers and having greater biomass are						1	Both A	R are tri	e R is	correct	explan	ation to A
	1) Keystone species							Both Δ	R are tri	\mathbf{R} \mathbf{R} \mathbf{R}	R is not	t correc	t evnlana_
	2) Critical	link s	pecies				2.	tion to A					
	3) Dominant species 4) Link species							Only A	1 iaturna I				
36.	"Ecotone'	' is the	transitio	on zone	between	two	3	Ouly A	is true, i	X IS WIO	ng		
50.	1) Ecoreg	ions	2)Bio	tic com	munities		4. Only R is true, A is wrong						
	3) Biome		4) Ri	otones			46.	Arrange	the tollo	owing at	mosph	eric laye	ers
37	In an ecolo	ogical c	ommun	ity if or	ne specie	s is inhih-		in corre	ct sequer	nce fron	1 space	to earth	
57.	ited cher	nically	by anot	her spe	cies it is	scalled		a. Tropo	osphere		b. Str	atosphe	ere
	1)Symbios	sis	ey unet	2) Pr	edation	, cuirea		c. Iono	sphere		d. Ex	osphere	•
	3) Allelona	athy		$\frac{2}{4}C$	mnetitio	n		1	Δ	B	C	л П	
38	The term e	ecology	was fir	stused	hv			1. 2	D	D C	P		
50.	1) Tanslev	01055	wus mi	2) Lar	nkaster			2. 2	D C	D		A D	
	3) Reiter			4 Ha	eckel			5. 4			A		
30	The stu	dvofi	nterrelat	ionshin	c hetwee	n	4.5.5	4.	D	A	C	В	
57.	different	snecie	soforge	nisms	and their		47.1	he atmo	spheric z	zone wh	ere ten	nperatui	re
	environn	nent is a	s of ofge valled	u1151115 c			i	ncreases	with alti	tude is			
		ulation	ecology	2) sv	necolom		1) Tropos	phere		2) Stra	tospher	re
	3) aute	cology	ceology	$\frac{2}{3}$ so	ciology		3) Therm	osphere		4) Ion	osphere	:
40	In strat	tospher	0	т) зо	ciology		48.6	/ A): Ozo :	ne is rich	in strat	ospher	e	
40.	1) the t	emper	c, sture inc	rancer	with altit	ıde		$\mathbf{R} \cdot \mathbf{O}_{\mathbf{Z}_{0}}$	ne nrotec	ts the o	roanisn	s from	the effects
	2) the t	emper	ature de	reases	with alti	ude	6	of U V	ravs		gamon	15 110111	the effects
	2) the i	onizina	rodiotic	n is do	will all	luue	1 Both A D are true D is correct explanation to A						
	$\frac{3}{1} = \frac{3}{1} = \frac{3}$	onizing A 3	gradiatic		velopeu		2. Doth A. D are true. Dut D is not correct explanation to A						
<i>1</i> 1	The fu	notiona	1 status c	fonor	noniam ia		2. Bour A, K are true, But K is not correct explana-						
41.	1) 2201		i status (2) ho	gamsin is bitot								
	2) address (1) applacient status						3. Only A is true, K is wrong						
12	5) add	res nhorio	4 <i>)</i> iou an an i	table fo	icai statt	18	4. Only R is true, A is wrong						
42.	Aunos	pheric	flangel Sul	lable lo	ſ		49. The following statements are related to stratosphere.						
	propag	ation o	l long di				i.It is the layer extending to about 50 to 55 km above						
			n signais	S IS 2) ata			the earth's surface						
	1) trop	nospne	ere	2) su		e	ii.O ₂ and nitric oxide present in this layer are in ionic						
12	3) ionosphere 4) exosphere							state.					
43.	Denses	t and m	iost turd	ulent la	yer of au	nosphere	ii	i.This lay	yer reflec	ts short	radio w	vaves m	aking tele-
	1S 1) 4ma m1	1		2) -+	- 4 1	_		commu	nications	over lo	ng dista	ance pos	sible.
	1) tropi	iospne	re	2) str	alospher	e	Т	he corre	ct combi	nation is	s:	1	
	3) inospi	nere	EXTE	4) ex	osphere		1) only i i	s correct	2) only	v ii is co	orrect	
		L	'F'A FI	∠ - 11			3) only iii is correct 4) All are correct						
44.	Match th	ne follo	wing an	d choos	se the cor	rect com-	50 N	/atch the	followi	ng and c	choose	the corr	ect combi-
	bination			.			50. 1	notion	, 10110 WI	ing und t	10050		cereonior
	$\underline{\text{List} - I}$	lagy		<u>List –</u>	<u>· II</u> ational na	aof		List I		List	п		
	a) Autect	nogy		an or	ognism	10 01		$\underline{\text{List-I}}$	nhoro	i) Rott	<u>II</u> tom low	or of otr	20
	b) Niche			ii) Th	e place wh	ere an		<i>a)</i> 101105	sphere	1) Dou	onn iay	ci oi au	110
	,			organ	ism lives			h) Strat	osnhere	ii) Ref	Ject sho	rt	
	c) Habitat	:		iii) In	ter relation	iship		0)51140	ospiicie	Radio	waves	11	
				betwe	en individ	lual		c) Trop	osnhere	iii) Oz	oneum	brella	
				organ	isms of th	e d their		d) Exos	nhere	iv) Sn	ace beg	ins after	r
				enviro	onment	a uieli		<i></i>	r	this lay	ver	,	-
	d) Syneco	ology		iv) As	semblage	of all				v) Thi	n laver	ofearth	with
	the populations v) Inter relationship								life	5 -			
								a	b	c	d		
				specie	en differe	nisms		1.	i	i	ü	iv	
				and th	neir enviro	nment		2.	iv	ü	i	i	
		a	b	c	d			3.	i	iv	ü	iv	
	1.	ü	i	i	v			4.	i	ш Ш	i	iv	
	2.	iv	i	ii	v								
	-						•						

51.	Match the follo bination List-I a) Hydrosphere b) Crust c) Mantle d) Core	owing e	and choos i)Iron and ii) Iron an iii) Habita variety of iv) Sea,la rivers v) Iron an	e the con List- Nickel d coppe t of a ric organisi kes and	rrect com- II er eh n	57.	 iii. Rain forests are in the temperate regions. The correct combination is 1) only i is correct 2) only ii is cor rect 3) only iii is correct 4) i,ii,iii are correct Spot a '<i>biome</i>' among the following: 1. Treeless zone of the temperate region 2. Coniferous forest of the arctic belt
	a	b	c	d	Sium		3. grassland of the 20° - 40° latitude
	1. iv	ü	V	i			4. coniferous forest of the $40^{\circ} - 60^{\circ}$
	$\frac{2}{3}$ $\frac{1}{3}$	1	Ш iv	1V V			latitude
	3. ∎ 4. iii	ш i	i	v iv			
52.	"Aesthenosph	ere"(of the Earth	n is the			ABIOTIC FACTORS - LIGHT Sun releases radiant energy in the form of - electromagnetic waves
	1.outer core	. (an ta) tha				solar energy Perceived by human eye is
	2. region below	(inn	er to) the	anhara		Vi	- V181ble light wave length is - 360 nm to 760 nm
	3.outer most (u	ipper i	nost) man 4 jnn	tle		•	A large density of solar radiation measured outside Earth's atmosphere is -Solar constant
53.	Arrange the fol correct sequen	lowin ce	g levels of o	organiza	tion in	•	Energy reaching the upper layers of atmosphere is - fifty millionth part (1/50,000,000) 1.9g.cal/ cm2/min.
	A. Organisms C. Communitie F. Biosphere	es	B. Po D. Ec	osysten	IS 1	•	Incoming solar radiation that reaches the earth's surface - Insolation
		D	G	D	F	•	Percentage of sunlight available at the earth surface
	1. A 2. E 3. C	D D	C C B	D B E	E A A		-51% Percentage of sunlight doesnot reach the earth surface -49%
54.	4. A Assertion (A)	C : Th	B e place wl	D here an	E organism	•	Percentage of sunlight that reflects back to space
	lives is called h	abitat	organism'	a habita	t is deter	•	Percentage of sunlight scattered or reflected to
	mined by both	a biot	tic and bi	otic fact	ors.	•	space by clouds and atmospheric particles -26% Percentage of sunlight absorbed by atmospheric
	I. Both A, R an Λ	re true	e, R 1s corre	ect expl	anation to		gases, particles and clouds - 19%
	2. Both A, R an	re true	e, But R is	not corr	ect expla-	•	incidence, length of the day and absorption of
	nation to A 3. Only A is tru	ıe, R i	s wrong			•	Average duration of light in equatorial region
	4. Only R is tru	ıe, Ai	s wrong				- 12 nours /day Regions where light is available for 24hours during
55.	(A) : Nicho	e is	a functio	nal ro	le of an		summer and 24 hours darkness during winter
	organism.	•	1 1		1		- Tundra
	(R) : It is organical and biotic e	usms enviro	onment of a	respons an orgai	e to physi- nism & its	•	Ocean water and large lakes are divided into three regions depending on the - Penetration of light
	1 Both A R at	mera	R is corre	outers	anation to	•	- Euphotic Dysphotic and Aphotic zone
	A	ie nue	, IC 15 COIN	et expi		•	The zone that extends up to the depth of 80 m from
	2. Both A, R and	re true	e, But R is	not corr	ect expla-		surface is - Euphotic zone
	nation to A 3. Only A is tru	ıe, R i	s wrong		-	•	Aquatic vegetation, phytoplankton and number of animals depending upon plants are abundant in
	4. Only R is tru	ıe, Ai	s wrong				-Eupnotic zone The zone that extends from the depth of 80 m to
56.	The following	stater	nents are r	elated to	different	Ĩ	200 m is - Dysphotic zone
	types of Biome	es.			_	•	The zone where limited photosynthetic activity
	i. Tundra is a tr	reeless	s ground in	the arct	ic region.		occurs is - Dysphotic zone
	11. Taiga (or) co regions	onitero	oius forests	are in th	ne tropical		metres are - Blue light rays

- The different depths at which light rays are Absorbed by water are
- Red first 4 metres
- Orange first 20 metres
- Yellow first 50 metres
- Green and violet first 100 metres
- The region without light and is deeper than 200 metres - Aphotic zone is
- Photosynthetic plants are totally absent in - Aphotic zone

BIOLOGICAL EFFECTS OF LIGHT Effect on the pigmentation of animals

- Less pigmentation found in cave dwelling animals is because of non - Exposure to light.
- Dark skin colour of human beings living in tropical regions is because of - the exposure to greater intensity of light
- Less pigmented skin is the character of people living in - temperate regions

Effect of light on movement

- Movement of the entire organism in response to - Phototaxis light is
- Oriented locomotor movements of an animal in response to light is termed - Phototaxis
- Movement of Euglena towards the source of light - Positive phototactic is
- Movement of animals like earth worms, planarians cockroaches away from the light source is

-Negative phototaxis

- Non directional movement in which the rate of movement is related to intensity of stimulus is termed - Photokinesis
- Example for photokinesis Larvae of mussel crab (Pinnotheres maculatus)

Effect of light on behaviour

- Animals which move about during daytime and take rest during night time are - Diurnal animals
- Animals which are active during night time and takerest during daytime are - Nocturnal animals Effect of light on metabolism
- Increase in the intensity of light causes the - Increase the rate of metabolism
- Metabolic rate of cave dwelling animals is less as they live in - Darkness

Ultraviolet Ravs

- Wave length of ultraviolet rays is less than 380 nm
- Wave length of UV C 100 nm to 280 nm
- Wave length of UV B 280 nm to 320 nm
- Wave length of UV A 320 nm to 380 nm
- Lethal rays are UV C rays
- UV rays harmful to organisms UV B
- Prolonged exposure to UV A rays causes

- Skin cancers in man UV Rays - Help to convert the sterols of the skin in to Vitamin D.

BIOLOGICAL RHYTHMS

Behavioural activities of living organisms that occur at regular intervals at the same time are known as -**Biorhythms/Biological Rhythms**

- Biological rhythms with a periodicity of about 24 hrs are called -**Circadian rhythms**
- Emergence of fruit flies (Drosophila) from pupae . at dawn, return of birds to their nests at dusk are examples of -**Circadian rhythms**
 - Correlation of some activities of organisms and the phases of the moon is called - Circalunar Rhythms
 - Example of lunar periodicity is the reproductive cycle Eunice viridis (Palaloworm) of -
- Swarming of paloloworms occurs during last quarter • of lunar cycle in month of -
 - October and November to release eggs and sperms.
- Innate, (or) endogenous mechanism controlling bio logical rhythms are called - Biological clocks.
- Entrainer that sets or resets the biological clocks is light

Photoperiodism

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- Duration of an organism's daily exposure to light is called - Photoperiod
- Growth and development or other responses of organisms to the length of photoperiod is called - Photoperiodism
 - Specific length of photoperiod is-Critical photoperiod

Reproductive action occurs when the photoperiod falls below the critical photoperiod in

- Shortday animals

An action will not occur until the photoperiod had passed the length of critical photoperiod in

- Long day animals.

- Responses that occur in late summer or autumn due to changes in the length of photoperiod are called - Circannual rhythms
- In insects, a period during which growth and • development is suspended due to adverse environmental conditions is called - Diapause •
- Migratory behaviour in birds is an example of - Photoperiodism
 - 12.5 hours The critical photoperiod is
- Size of testis gets affected by photoperiod hamsters when critical photoperiod is longer than 12.5 hours
 - Both the sexes of hamsters are synchronise because - Female has a similar day length of male.

Bioluminescence

Cold light emitted by animals like *jelly fish*, ctenophores, Chaetopterus, deep sea fishes, some protozoans is called

-Bioluminescence

- Heat cannot be produced in biological light due to the absence of -Infra red rays.
- Light is emitted by animals due to the presence of • protein - Luciferin •
 - Types of luceferin molecules are - Six
- Necessary reactants together form a unit called - Photoprotein •
 - Photoprotein is triggered to produce light by -Calcium ions (Ca+2).

Luciferase Luciferin +O2 +Salt+ATP Oxiluciferin +H O^2 + ADP+ light

•

ABIOTIC FACTORS - LIGHT LEVEL-I

ABIOTIC FACTORS - LIGHT LEVEL-I				The development of mela light induced.	nophores depends on the
58	The total life supporting er	wironment is called		2) Chemical reactions	10115
50.	1) Ecosphere	2) Riome		3) Physical reactions	
	3) Ecological Niche	4) Habitat		4) Enzyme reactions	
59.	Which of the following is	s not an abiotic chemical	72.	Melanophores of the skin	are influenced by
0,51	component.		,	1) Moisture 2) Light 3) S	alts 4) Water
	1)Acidity	2)Rainfall	73.	Movement of organisms	s towards or away from
	3) Alkalinity 4) Inorgan	nic nutrients		source of light is called	5
60.	Thewholesystemcomprisin	ng the living organisms and		1) Photoperiodism	2) Phototropism
	the physico chemical fact	ors of a habitat constitute.		3) Phototaxis	4) Photo kinesis
	1)Biome	2)Community	74.	The locomotory speed of	animals when influenced
	3) Ecosystem	4) Population		by light intensity is known	n as
61.	Main link in the food chai	n of ecosystem		1) Photoperiod	2) Phototropism
	1) Consumers	2) Decomposers		3) Photokinesis	4) Phototaxis
	3) Transformers	4) Producers	75.	Ultraviolet waves have a v	wavelength less than
62.	The wave lengths of visible	e spectrum ranges between		1) 280 A^0	2) $360 A^0$
	1) 680 – 760nm	2) 360-760 nm		3) 150 A ⁰	4) $450 A^0$
	3) 200-600 nm	4) 760-860 mm	76.	An example of photoperic	odism
63.	The duration of light availa	ble in tundras during sum-		1) Migration of fishes	ofmussola
	mer is about			2) Locomotion of Larvae 3) Birds migration	4) Movements of owls
	1) 12 hours	2) 24 hours	77.	Which of the following of	organisms are positively
	3) 6 hours	4) 18 hours	, , ,	phototactic	
64.	Incoming solar radiation t	hat reaches the surface of		1) Earth worm, Planaria	a
	the earth is called			2)Planaria, Euglena	
	1) Insolation	2) Albedo		3) Euglena	
(5	3) Visible light	4) Ultraviolet rays	-0	4) Pinnatheera, Euglend	<i>n</i>
65.	1) Zooplanktons	20 Dy 2) Phytoplarkton	78.	Which of the following ha	ive no effect on vision
	3) Herbivores			1) Photoperiod	2) Photokinesis
	4) Green plants and phytoplankton			3) Phototropism	4) Phototaxis
66.	66. In the water column disphotic zone extends to a			1) Evolution Dlan ania	ly phototactic organisms
	depth of			1) Euglena, Planaria, 2) Davieturi, Eautherrouw	
	1) 80 mts	2) 80-200 mts		2) Ranaira, Earinworm 2) Earth worm Dianani	a
	3) Beyond 200 mts	4) 200-500 mts		3) Eurin worm, Planaria A) Euglang, Zooplankto	<i>a</i>
67.	The zone of ocean extend	ding upto 80 mts depth is	80	The increase of locom	n otory speed of larva of
	called		00.	Pinnotheres maculatus und	der high intensity light is an
	1) Aphotic zone	2) Disphotic zone		example of	ter men mensky nem is un
(0)	3) Euphotic zone	4) Depression zone		1) Photoperiodism	2) Phototropism
68.	Shade loving plants are	2		3) Photokinesis	4) Phototaxis
	1)Seiopnytes	2)Mesophytes	81.	Which of the followi	ng set are negatively
60	5) Aerophytes	4)Hydrophytes		phototactic	
69.	In the <i>aysphotic zone</i> the	ne predominant		1) Euglena, Ranatra	
	ight available for photosyl	nuneuc acuvity		2) Zooplankton, Phytopla	inkton
	1 Rhue light	2 Padlight		3) Planarians, Earthworm	S
	2 Vellow light	2. Reu light		4) Phantom larve, Planari	ans , Earthworm
70	The radiation reflected from	T. Orange light	82.	All are negatively photota	ectic except
70.	earth is called	on the surface of the		1) Planaria	2) Zooplankton
	1) Insolation	2) Albedo		3) Euglena	4) Earthworm
	3) Visible light	4) Ultraviolet rays			
		., Chan, 10100 10030			

83.	Variations in the intensity of light stimulus,	95. Length of day between sun rise and sun set is
	irrespective of its direction, cause kinetic	1) Photoperiod 2) Phototaxis
	responses of different rates in	3) Photokinesis 4) Phototropism
	1. larvae of Pinnotheres maculatus	96. In insects, a period during which growth or
	2.Daphnia	developement is suspended and physiological ac-
	3. <i>Euglena</i> 4.adult of mussel crab	tivities decreased due to adverse environmental con-
84.	Assertion (A): The movement in the	ditions is called
	larvae of mussel crab is photokinetic	1) Dormancy 2) Diapause
	Reason (R) : The larva of mussel crab shows a	3) Photoperiodism 4) Biological rhythm
	directional movement in which the rate of movement	97. The following statements related to photoperiodism
	is related to direction of stimulus and not to the	i) The Biological response to a chage in the length of
	intensity of the stimulus	dav
	1. Both A, R are true, R is correct explanation to A	ii) Oriented locomotory movement of an animal in
	2. Both A, R are true, But R is not correct explana-	response to light.
	tion to A	iii)The reproductive cycles of many organisms are
	3. Only A is true, R is wrong	linked to photoperiod
	4. Only R is true, A is wrong	The correct combination is:
85.	Identify the annelid which exhibit bioluminescence	1 i and ii are correct? i and iii are correct
	1) Noctiluca 2) Chaetopterus	3 ii and iii are correct4 only iii is correct
	3) Ophiothrix 4) Pyrosoma	98 Identify the urochordate which exhibits biolumines-
86.	The rate of metabolism is low in	cence
	1) Surface feeders	1) Chaetonterus 2) Pyrosoma
	2) Cave Dwelling animals	3) Ctenophora 4) Ophiothrix
	3) Plants 4) Phyto Planktons	99. Bioluminescence emitted by orgnisms does not
87.	Lunar periodicity is exhibited by	contain
	1) Paloloworms 2) Earth worms	1) Light energy 2) Cold light
	3) Round worms 4) Tape worms	3) Infrared rays 4) Bioligical light
88.	Bird migration is influenced mainly by	100 Bioluminescence is also known as
	1) Food 2) Photoperiod	1) I V light 2) Moon light
	3) Gonads 4) Water	3) Hot light 4) Cold light
89.	Perceptions like feeling hungry at a specific time ev-	101 Mostly bioluminescence is found in
	ery day is an example to	1) Terrestrial organisms 2) Aerial organisms
	1) Biological clock 2) Lunar periodicity	3) Fresh water organisms
	3) Circadian rhythms 4) Bioluminescence	4) Marine organisms
90.	The vitamin synthesized with help of UV radiation is	102 In the living organisms, the biological
	1) Vitamin-D 2) Vitamin-A	rhythms are controlled by innate
	3) Vitamin-C 4) Vitamin-B	1) electro-magnetic wayes of solar energy
91.	Biological rhythms showing a period of 24 hours	2) biogeochemical cycles
	1) Biological clocks 2) Solar Flux	3) biological clocks
	3) Bioluminescence 4) Circadian rhythms	4) chemical messengers of the prev
92.	Regular recurrence of biochemical process at the	103. The rate of movement is related to the
	same time is due to	intensity of stimulus and not to the
	1) Biological clocks 2) Solar Flux	direction of stimulus in
	3) Bioluminescence 4) Circadian rhythms	1) autotrophic flagellates
93.	The birds flock together on the trees before dusk	2) nymphs of cockroaches
	and produce chirping noise is an example of	3) adult earthworms
	1) Bioluminescence 2) Biological clocks	4) larvae of mussel crabs
	3) Lunar periodicity 4) Circadian rhythms	104.Bioluminescent annelid is
94.	"Entrainer" that is responsible for the	1) Chaetogaster 2) Chaetoderma
	setting up of biological clocks is	3) Chaetopterus 4) Neometra
	1) Light 2) Temperature	105.In Tundra of polar regions. 24 hours
	3)Chemical messengers 4) Hormones	sunlight is noticed during

1) winter accor 2) minu accor	1112 (A) · Biognhere has many different ecosystems
2) summer season (1) summer season	(R): Biosphere includes all individual groups of
106 Which of the following achigogoal amotor while it	ganisms and the physical environment with which
high minescence?	they interact.
1) July fishes and Ctanonhores	114. (A): Cave dwelling animals lack pigmentation.
2) Purosoma and some deep sea fishes	(R) : Light induces pigmentation in animals.
2) <i>Chaptontarus</i> and squids	115. Match the following and choose the correct
4) Puresoma and Chastontarius	combination
107 Oriented locometer movements towards or away	a)Phototaxis i)Pinnotheres maculatus
from the source of light are called	b) Photokinesis ii) Euglena, Ranatra
1) Photokinosis 2) Photokyis	111) Moloch c) Photoperiodism iv) Bird migration
2) Phototronism (1) Photoneriodism	d) Lunar periodicityv) <i>Palolo worm</i>
	a b c d
108 Arrange the following in the according order based	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
on wave lengths	3 \mathbf{i} \mathbf{i} \mathbf{i} \mathbf{i} \mathbf{v} \mathbf{v}
a Y Pays b LIV Pays	$4. \qquad i \qquad i \qquad v \qquad v$
a. X-Rays U. UV - Rays	116. The end products of bioluminescence
1 ABCD 2 BCDA	1) Luciferin, H ₂ O, Oxyluciferin, ADP
$\begin{array}{ccc} 1. A D C D \\ 3. D C B \Lambda \\ 4. B \Lambda C D \end{array}$	2) Luciferase, O ₂ , ADP
109 (A): The quantity of light available to organisms	3) Light, Water, Öxyluciferin, ADP
varies with the habitat and seasons.	4) Light, O ₂ , Oxyluciferin, ADP
(R): In equatorial region the duration of light avail-	117. Identify the molluscans which exhibit
able is all the 24hrs of a day during the summer.	bioluminescence
110. (A) : Number of phytoplankton and animals are	1) Jellyfish 2) Pyrosoma
more in euphotic zone.	3) Ophiothrix 4) Squids
(R) : The more amount of light tends to develop	118. The following are the statements ralated to
phytoplanktons which inturn increase food source	Bioluminescence.
of animals.	i) Bioluminescent animals contain a protein called
hination	Luciferin and an enzyme Luciferase.
List-I List-II	ii) Oxidation of Luciferin in the presence of the en-
a) Euphotic zone i)No light penetration	zyme luciferase produces light, water and
to photosynthesis	oxyluciferin
c) Limnetic zone iii) Photosynthesis	iii) Bioluminescence is the only source of light for
d)Thermocline iv) Photosynthesis is	deep sea forms which live in darkness
maximum	The correct combination is:
v)Layer of rapid fall in temperature.	1. i,ii,and iii are correct 2. ii and iii are correct
a b c d	3. i and iii are correct 4. only i is correct
1. i ii iv	119. Arrange the following in sequence according to
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	their range of radius in discending order
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	a) U-V rays b) U-VB rays
112 Based on the penetration of light only in a body of	c) U-V-C rays d) U-V-C rays
water the water column is divided from the bottom	1) a-b-c-d 2) a-c-b-d
to the surface sequentially into	$3) b-a-c-d \qquad 4) d-b-c-a$
1. euphotic zone. dysphotic zone and	120. Match the following and choose the
aphotic zone	correct answer
2. aphotic zone, dysphotic zone, euphotic	List-I List-II
Zone	A. Palalo worm Of Pacific i. Lunar periodicity
3. aphotic zone, limnetic zone, euphotic	Ocean
zone	B. Larva of mussel crab ii. Depends on the
4. euphotic zone, metalimnion and	metabolic water
aphotic zone	C. Lungtish of Africa iii. Photokinesis
apriode Lone	D. Kangaroo rat of arid iv. Aestivation
	places

Temperature commonly expressed as - Degrees v. Bioluminescence of fahrenheite scale or on celsius scale 1) A-i, B-iii, C-v and D-ii Main source of heat energy is the -Sun • 2) A-i, B-iii, C-iv and D-v Extreme variations in temperature from day to night • 3) A-v, B-iii, C-iv and D-ii and from season to season are found in 4) A-i, B-iii, C-iv and D-ii - Inland areas Organisms which can tolerate wide fluctuations in 121. Read the following and choose the correct • temperature are termed -Eurvthermal . combinations Eg: Lizards, Birds and Mammals I. Euglena is positively phototactic Organisms which can tolerate only small variations • II. Pheretima is negatively phototactic in temperature are termed III. Periplaneta exhibits photokinesis -Stenothermal organisms Eg: Coral animals, Fishes IV. Eunice exhibits lunar periodicity The temperature at which the organism's life • 1) I and II only 2) I, II and III only activities are at the maximum level is called 3) III and IV only - Optimum temperature. 4) I, II and IV only The lowest temperature at which organisms can live • 122. Read the following indefinitely is called - Minimum effective temperature. B. Yellow A. Green The highest temperature at which an organism can C. Orange D. Red live indefinitely is called Based on the capacity of penetration, arrange - Maximum effective temperature. them in an order An organisms enters into chill coma if the • temperature is - Below minimum effective 1) A-C-B-D 2) D-A-B-C temperature 3) A-C-D-B 4) D-C-B-A The lowest temperature at which survival is possible 123. Read the following and choose the correct - Minimum survival temperature combinations An organism goes into heat coma if the temperature • A. Incoming solar radiation that reaches the is above maximum effective level earth's surface is insolation Thermal stratification in lakes In the temperate regions marked variations in temperature B. Radiation reflected is albedo of the earth occurs with the change of - Seasons c. Insolation depends only on the angle of Thermal stratification occurs in incidence but not the - Temperate lakes length of the day Formation of layers of water in freshwater lakes • 1) I, II only 2) II, III only due to temperature variations is called 4) I, II, III 3) I, III only - Thermal stratification Summer stratification 124. Read the following and choose the correct The upper layer of water that having a temperature range of 21° to 25° C during summer in temperate • combinations I. Lithosphere cools by conduction lakes is called - Epilimnion II. Most of the mantle cools by convection The zone of water where there is rapid decrease in • III. Sun emits the heat as radiation temperature at rate of 1°C/meter is called -Thermocline /Metalimnion IV. Radiation without heat is biological light The cold and oxygen defecient zone of water below • 2) II, III, IV only 1) I, II, III only the thermocline is called - Hypolimnion 3) II, III only 4) All are correct Oxygen levels decrease in hypolimnion if the 125. Assertion (A) : Heat cannot be produced by thermocline is formed bioluminescent radiation - Below the compensation level **Reason (R)** : Infrared radiation is absent in • Over turn of water occuring in the lake after summer stratification is - Fall overturn cold light During fall over turn - Oxygen rich water from 126. Solar Radiation of wave length less than 360 surface reaches deeper area millimicrons is: (EAMCET-2004) WINTER STRATIFICATION During winter, surface water freezes to jce where 1) Ultraviolet radiation • as water below the surface remains at 4 ° C and is 2) Infrared radiation - Winter stratification called 3) Radio waves 4) Visible light The organisms are not subjected to hypoxia during . winter stagnation as there is - decrease in bacterial Temperature as an ecological factor decomposition and respiratory activity of aquatic Measure of the intensity of heat is called organisms. - Temperature •

Spring overtrn occurs in a stratified lake after - Winter • Periodic replenishment of nutrients and oxygen in stratified lakes takes place by the

- Overturn in lakes. The phenomenon that upwells the nutrients & increases the productivity is due to - overturns Biological effects of temperature:

• Animals which can maintain constant body temperaure within narrow limits are

- Homeotherms Eg: Birds and Mammals.

- Animals which are not capable of maintaining constant body temperature are - poikilotherms
 - Eg: Fishes, Amphibians, reptiles etc.
- Internal mechanisms to regulate body temperature are absent in Poikilotherms

Thermal migrations:

Migration of animals to the places of optimum temperature range to escape extremes of temperature is - Thermal migration Desert animals move to shaded places to avoid scorching heat of the sun during - Noon The Organisms which can move between land and water in an attempt to - Minimise the effective of change in temperature on their bodies Thermal migration in desert animals takes place during - Noon

The organisms move between land & water to minimise the effect of temperature are -

Amphibians, Crocodiles Hippopotamus

Metabolism

Effect of temperature on metabolic activities of animals is more significant in Poikilothermic than in Homeothermic animals because of - Homeotherms maintain constant body temperature.

- Temperature regulates metabolism because temperature influences the Activity of enzymes.
- Effect of temperature is not significant in

- Homeotherms

•

•

• Doubling of rate of biochemical reactions with every 10 ° C rise in temperature is called

- Van't Hoff's rule.

- The effect of temperature on the rate of reaction is expressed as - temperature coeffecient or Q
- Value of Q for an enzyme controlled reaction is approximately 2

$Q_{10} = \frac{rate of \ reaction at \ X^0 \ C}{rate of \ reaction at \ (X-10)^0 \ C}$

Effect of temperature on sex ratio

- Increase in the number of male individuals -In Ratflea *xenopsylla cheopis* population than the female individuals is due to increase in temperature.
- Recent invitro and invivo experiments on turtle embryo have shown bipotential gonads are masculanized in the absence of Temperature trigger.

Female producing temperatures cause the enzyme

aromatase to act locally on gonads to produce estrogen and activate the development of -Ovaries

Cyclomorphosis

Cyclomorphosis was observed in

Daphnia (by Coker)

In winter head of *Daphnia* is - Round The helmet like projection starts on head of *Daphnia* during - Spring season

The helmet like projection completely forms during-Summer

The helmetlike projection begins to decrease during -Autumn

The helmet like projection completely disappear & the head becomes round during- winter

During winter *Daphnia* can float on water because of - more density of water.

The hood like structure in *Daphnia* helps to increasing buoyancy

• Modifications in the body form in relation to seasonal changes in temperature are cyclomorphosis.

Other effects of temperature

Effect of temperature on the body size of animals is explained by
 Batio of body surface to the body size of warm

Ratio of body surface to the body size of warm blooded animals living in colder regions is - less than that of their counter parts living in warmer climates

- Effect of temperature on the size of extremities of the body in homeotherms is explained by

 Allen's rule
 - Effect of temperature on the early segmentation in the development of some fish is explained by -Jordan's rule

Effect of temperature on pigmentation of animals is given by **Gloger's rule** According to Allen's rule - **large extremites increase the surface area without increasing the volume.**

Examples of Allen's rule - **Ear lobes of Fox** Number of vertebrae is 56 in - **Cod fish hatches**

in new found land $4^0 C - 8^0 C$

Number of vertebrae is 54 in - Cod fish hatches

in new found land $10^{\circ} C - 11^{\circ} C$

Pigmentation of skin is more in - Tropical region animals

Pigmentation of skin is less in - Temperate region animals

TEMPERATURE AS AN ECOLOGICAL FACTOR LEVEL-I

- 127. The activity which is not accomplished by heat
 - 1) Combustion 2) Respiration
 - 3) bioluminescence 4) Excretion
- 128. The organisms capable of tolerating wide temperature fluctuations are called
 - 1) Stenothermal

3) Eurythermal

2) Stenohaline 4) Euryhaline

129. The temperature at which water has maximum densitv. 1) 10° C 2) 45°C 3) 20°C 4) $4^{\circ}C$ 130. Movement of animals to safer places, to get protection from adverse effects caused due to extreme temperature is 1) Thermal migration 2) Winter stratification 3) Thermal stratification 4) Summer stratification 131. Which of the following is useful for ticks to recognize birds and mammals. 1) Legs 2) Eyes 3) Light 4) Body Temperature 132.Identify the set of warm blooded animals 1) Fishes, Amphibians 2) Reptile, Birds 3) Amphibian, Reptiles 4) Birds, Mammals 133.In winter stratification temperature of lower layers of water 1) More than 4°C 2) Less than 4°C 3) $4^{\circ}C$ 4) Between zero to 4°C 134. Which of the following are stenothermal animals 1) Corals, Fishes 2) Lizards, Mammals 3) Birds, Lizards 4) Mammals, Birds 135. The formation of layers in water of temperate lakes due to temperature is 1) Summer Stratification2) Winter Stratification 3) Spring Stratification4) Thermal Stratification 136. In summer stratification, the zone where there is a rapid decrease in temperature is called 1) epilimnion 2) metalimnion 3) hypolimnion 4) compensation level 137. The animals which can maintain constant body temperature 1) Cold blooded 2) Poikilothermic 3) Warm blooded 4) Thermo conformers 138. The thermo regulatory structures of birds mainly are 1) Scales 2) Hair 3) Feathers 4) Bony plates 139. The organisms which are incapable of tolerating wide temperature fluctuations 1) Warm blooded 2) Homeotherms 3) eurythermal 4) Stenothermal 140. An example for ectoparasitic Arachnid is 1) Scorpion 2) Head louse 3) Bedbug 4) Ticks 141. In Daphnia, the helmet like projection reaches maximum during 1) Winter 2) Spring

3) Summer 4)Autummn 142. In Daphnia a helmet like projection begins to develop on the head in this season 1)Autmn 2) Spring 3) Winter 4) Summer 143. Bergman's rule explains the effect of temperature on 1) Ear size 2) Vertebrae number 3) Body size 4) Metabolic rate 144. The action of enzymes in poikilothermic animals is explained by which rule 1) Allen's rule 2) Gloger's rule 3) Jordan's rule 4) Vanthoff's rule 145. Identify the law which explains the effect of temperature on embryology of fishes. 1) Allen's rule 2) Gloger's rule 3) Jordan's rule 4) Vanthoff's rule 146. Animals living in tropical region have more pigmentation than the organisms living in temperate regions. 1) Allen's rule 2) Gloger's rule 4) Vanthoff's rule 3) Jordan's rule 147. Which rule states that the cod fish hatching in cooler water possess more number of vertebrae than warmer water. 1) Allen's rule 2) Gloger's rule 3) Jordan's rule 4) Vanthoff's rule 148. Which of the following is the correct relationship of Coker with reference to abiotic factors? 1) Explained the effect of temperature coefficient in Drosophila embryonic development 2) Explained the cyclomorphism in Daphnia 3) Explained metamorphosis in the tadpole larva 4) Explained the effect of temperature on warmblooded animals in cooler places 149. Which rule says that the mammals that live in colder climates are with short extremities than warmer climates? 1) Gloger's rule 2) Bergman's rule 3) Allen's rule 4) Jordan's rule 150. During embryonic development of a codfish, the number of vertebrae 1) decreases, if the development occurs in the medium of high temperature 2) increases, if the development occurs in the medium of high temperature 3) remains constant in any temperature level 4) does not change by the influence of temperature 151. Q_{10} value is 1) rate of reaction at $(x-10)^0$ C/rate of reaction at x^0C

2) rate of reaction at $x^0C/$ rate of reaction at $(x-10)^0C$

3) rate of reaction at $(x-10)^{0}$ C/rate of reaction at 3) twice in a year 4) many times in a year 161. Bottom waters of a temperate lake are replenished $(v-10)^{0}$ C 4) rate of reaction at $(y-10)^{0}$ C/rate of reaction at by $(x-10)^{0}$ C 1) swimming of animals 152. van't Hoff's rule explains the effect of 3) overturns LEVEL-II temperature on 162. (A) :coral animals, fishes are stenothermic animals. 1) metabolism 2) pigmentation (R): These animals can tolerate only a small varia-4) size of the body 3) segmentation tion in temperature. 153. The head of Daphnia becomes round when the 163. (A): Birds and mammals are Homeothermic ani-1) temperature increases and buoyancy in water mals decreases (R): They are having a thermoregulatory centre in 2) temperature and buoyancy of water increase brain. 3) water is cool and dense 164. The sequence of layers of water during summer 4) water is warm and less dense stratification from surface to bottom 154. Assertion (A): During summer season, 1) Thermocline, Epilimnion, Hypolimnion Daphnia develops a hood like structure to 2) Epilimnion, Thermocline, Hypolimnion increase the surface area of the body which 3) Hypolimnion, Thermocline, Epilimnion increases buoyancy 4) Thermocline, Hypolimnion, Epilimnion **Reason (R) :** In summer the densita of water is 165. Assertion (A):- Hypoxia condition prevail in less so the buoyancy is less. hypolimnion during summer stratification 155. If male population of Agama is increased, the Reason (R):- When thermocline forms below the condition seen is effective penetration zone during summer 1) decreased temperature 166. Which type of stratification doesn't influence on or-2) increased temperature ganisms 3) cooler environment 1) Summer stratification 4) continuous raining 2) Fall over turn 156. Which of the following rules explains the effect of 3) Winter stratification temperature on the body pigmentation? 4) Autumn over turn 1) Gloger's rule 2) Allen's rule 167. Over turn helps in periodic replenishment of nutri-3) Jordan's rule 4) Bergman' rule tive materials and oxygen respectively 157. Owing to the presence of a mammal in cooler 1) In upper layer & Lower waters climate, it has large sized body and less 2) Lower water & In upper layer pigmentation. The other features noticeable in it 3) In thermocline are 4) Only in upper layer 1.Long tail, short legs and long ear lobes 168. Which rule states that rate of metabolic activities 2.Short tail, short legs and long ear lobes will be doubled for every increase of 10°C tem-3.Long tail, long legs and long ear lobes perature 4. Short tail, short legs and short ear lobes 1) Allen's rule 158. Which of the following layers of atmosphere 3) Jordon's rule protects the animals from U.V. radiation? 169. (A) : The extremities of ears, tails of mammals of 1) Troposphere 2) Stratosphere colder region are shorter than those of the warmer 3) Ionosphere 4) Exosphere regions. 159. Cod fish that hatches off the coast of (R) : As the body temperature escapes through the skin, the relative body surface area should be less Newfoundland at the relatively less temperature in mammals living in colder regions. range has 170. Study the following about water flea and identify 1) more number of vertebrae the incorrect statement/statements 2) less number of vertebrae a. Shows cyclomorphosis 3) no vertebrae b. Cyclomorphosis is reported by Romer 4) no influence on the number of vertebrae c. Helmet-like head is formed during summer 160. In temperate lakes, the over turns occur d. Round head is formed during winter 1) once in a year 2) never in the existing period

2) Gloger's rule

4) Vanthoff's rule

2) floods

4) heating

1) c, d only		2) b, c, d only		temperatures prevailing in their water bodies at
3) b, d only		4) b only		differnt seasons. (EAMCET-2007)
171 (A): The effect of ten	npera	ture on the metabolic ac-		
lothermic animals th	is is ii 19 in	Homeothermic animals		Water : A medium for the
(R): The Homeothe	ermic	animals are capable of		habitation of Organisms
maintaining constar	nt bod	ly temperatures.		Properties of water
172. If the male population	n of λ	Kenopsylla	•	Hydrosphere constitutes about 71% of the earth
(Rat flea) is increased	l, thei	n the temperature is		surface
1) decreased		2) increased		Water is an - Universal solvent
3) remained constant				70 - 90%
4) either increased or	r decr	eased	•	Circulation of water between the atmosphere and
173. Match the following	:(EA	MCET-2006)		the earth's surface is called - hydrological cycle
Set-I		Set-II		Oceans are main reservoir for the
a) Vant Hoff's rule	1.B	ody size	•	Universal solvent is - water
b) Bergaman's rule	2. M	etabolic rate	•	Amount of heat required to raise the temperature
c)Allen's rule	3. D	evelopment		of 1 gm of water by $1 \degree C$ is specific heat.
d) Jordan's rule	4. O	rgan size	•	Water has great capacity for absorbing heat with
The correct set is :				only minimal change in temperature due to its
1) a - 1, b - 2, c - 4, d	d - 3		•	Ouantity of heat required to convert one gram of
2) a - 2, b - 1, c - 3, d	d - 4			ice at 0° C into water at 0° C is called
3) a - 3, b - 4, c - 2, d	d - 1			- Latent heat of fusion
4) a - 2, b - 1, c - 4, c	d - 3		•	Quantity of heat required to convert one gram of $\frac{100}{2}$ C to stoom is called
1/4.Match the following:		(EAMCE1-2007)		-Latent heat of vaporisation
Set - I	Set ·	- II	•	Latent heat of fusion of water is - 80 calories
(a)Allen's rule	(1)	Fishes of cooler	•	Latent heat of vaporisation of water is
		waters have more		- 540 calories
		vertebrae than those		Water has highest surface tension than any other liquids - Except Mercury
		found m hot waters	•	Aquatic organisms like water bugs can skate on the
(b) Bergman's rule	(2)	Temperature	wate	er surface due to the
	Ì	influences pigmentation		-Higher surface tension of water.
		in animals	•	Increase in pressure is seen as there is increase in
(c) Jordan's rule	(3)	Temperature	•	Density of water is found to be maximum at -4° C
		affects various organs	•	For every 10 metres increase in depth, pressure
		ofanimals		increases by - One atmosphere.
(d) Classeda mila	(A)	Deducine of	V	Vater problems and their management
(a) Gioger's fuie	(4)	bouy size of		in aquatic animals
		region is large whereas		Largest habbitat in the world is -Aquatic habitat
		these living in het		based on the Salinity of water, aquatic habitat is distinguished in to - Fresh water Sea water &
		uiose nving in not		Esturine habitats
		regions are small.		Aphenomenon that all animals maintain constant
The correct match is				internal environment - is called Homeostasis
(1) a-2 b-1 c-	-3	d-4		(higher water potential) diffuses across a permeable
(2) a-4 b-2 c-	-3	d-1		membran into a solution of higher concentration
(3) a-3 b-4 c-	-1	d-2		(lower water potential)In - Osmosis
(4) a - 4 b - 3 c - 3	_2	d-1	•	Regulation of water content in the body is
175 Statement (S) \cdot D	- Jonhn	is populations in a water	•	-Osmoregulation Water potential is higher for a solution of
body at different seas	apini	f an year showed marked		- Lower concentration
variations in their b	odv m	omhology	•	Water potential is lower for a solution of
Doosons (D) · Cyclar	nom1	ogia in some nlentronia		-Higher concentration
organisms is influ	lence	iosis in some plankionic	•	In Ireshwater organisms water enters into the body
organishis is lilli		a by the variations in	•	Well developed glomerular kidneys are present in
			1 ⁻	acteropea Biomeratar Rianeys are present in

- Fresh water fishes. Water problems and their In freshwater fishes salts are absorbed by management in terrestrial animals - chloride cells in gills • Insects prevent the water loss by having Osmoregulatory organelle of Amoeba are -- Chitinous exoskeleton **Contractile vacuoles** - Moist soil to servive Earth worms need The lung fish that undergoes aestivation (summer Moloch horridus has - Hygroscopic system of sleep)is -**Protopterus** grooves in its skin. Protists protect themselves by the development of In Moloch horridus - Water is taken by Capillary - Cvstwall action through grooves. Asexual reproductive bodies formed during summer In Moloch horridus - Water is taken by guping in sponges are called - Gemmules mechanism in to mouth. **MARINE HABITAT** Thorny devils actually drinks - Water from dew Water potential of sea water is less than that of that falls on their backs and they can gain as -Body fluids of marine animals much as a gram of water in rain storm. Marine animals lose water from the body by -Excretory product of reptiles, birds and insects is Exosmosis Semi solid Uric acid Adaptation of marine fishes to reduce the loss of Excretory product of Arachnids is - Guanine • water along with urine is presence of Urine in mammals is hypertonic due to the presence • - Aglomerular kidneys of -Henle's loop in the nephrons and less number of nephrons - Hyper tonic Urine Mammals excrete Sea fishes drink water to -Compensate loss of • Wall lizards utilise - Water present in the food water Adaptation of Moloch horridus to survive in deserts • A glomerular kidney reduces the is presence of -Hygroscopic skin Loss of water along with urine The desert animal that obtains water from its food, In marine fishes, excess salts are secreted by Cacti plants is -Neotoma (wood rat) Chloride secreting cells in gills. Dipodomys spectabilis (kangaroo rat) survives • Salt water drips out through the nostrils in case of without drinking water as it depends on -Sea gulls and penguins Metabolic water. Ducts from salt excreting glands lead in to -Animals that cannot withstand wide variations in • Nasal cavity salinity are called -Stennohaline animals. Salts glands without ducts open near the eyes in -Camelus dromedarius (Camel) can survive even . Marine reptile (Giant Turtle) after losing body water -Adaptation seen in cartilagenous fishes to maintain 40 % of its body weight their body concentration isotonic to surrounding A camel sweats only when its body temperature • - Physiological uraemia water is - 41 °C and above rises to Nitrogenous substances stored in the body fluids of • In camels body heat is lost easily through skin due cartilaginous fishes are -- Absence of subcutaneous fat to the Urea and Trimethylamine oxide During night camel's peripheral temperature The region where rivers open into the sea is comes down to -34° C Estuary Stenohaline animals can tolerate During day time camel's skin acts as - Only narrow range of Salinity. - Heat sink Very wide range of variations in the salinity in **RBC** with high Osmotic variation present in different seasons are found in -Brackish waters - Camel Animals that can with stand wide variations in • In camels, temperature fluctuations during day and salinity are called - Euryhaline animals night and effeciency in sweating helps in the Fishes which migrate from sea water to fresh water - Preservation of about 5 litres of water /day for breeding are -**Anadromous fishes** Oval RBC of camels facilitate their flow in • Eg: Hilsa, Salmon - Dehvdrated state Fishes which migrate from freshwater to sea water Eggs protected by a shell with a fluid filled amnion • for breeding are called -Catadromous fishes around the embryo are called - Cleidoic eggs Eg: Anguilla bengalensis • Cleidoic eggs are laid by vertebrates like Migratory fish are - Euryhaline in nature - Reptiles and birds Type of kidneys in euryhaline animals are to adjust In one drink camel drinks -20-25 gallons to the changing Salinities they have -Very efficient kidneys present in - Camel Glomerular kidneys. Urine is as thick syrup & Faeces are dry in Absorption or excretion of salts occurs due to the - Camel presence of -Chloride cells in the gills. Conservation of water is crucial in the case of Salmon after entering rivers maintains cytoplasm - Desert animals -Isotonic

WATER

	LEVE	L-I
176.	The continuous circulati	on of water between earth,
	planet and atmosphere	is known as
	1) Hydrological cycle	2)Heat budget
	3) Solar Flux	4)Chemical cycles
177.	Latent heat of vapourisa	tion of water per one gram
	is about	
	1) 80 Cal	2) 240 Cal
	3) 540 Cal	4) 636 Cal
178.	Some insects can run a	nd walk on water due to
	1) High density of wate	r
	2) High pressure of wat	er
	3) High surface tension	of water
	4) High evaporation of	water
179.	Identify the fresh water f	ish which exhibits aestiva-
	tion	
	1) Scoliodin	2) Protopterus
	3) Echeneis	4) Catla
180.	Which of the following	forms gemmules during
	unfavourable conditions	
	1) Protozoans	2)Annelids
	3) Coelenterates	4) Sponges
181.	Henles loop is prominer	ntly found in kidneys of
	1) Fishes	2) Mammals
	3)Amphibians	4) Reptiles
182.	The fish stops feeding	and drinks
	water on entering the	river to keep the
	cytoplasm isotonic to	the environ
	mentis	
	1) Hilsa 2) Ang	guilla
	3)Salmon 4)Sar	dinella
183.	In fresh water fishes os	moregulation problem is
	solved by	
	1)Aglomerular kidney	
	2) Less number of neph	rons in kidney
	3) Large number of nepl	hrons with well developed
	glomerular kidney	
	4) Less number of nephr	ons in aglomerular kidney
184.	The problem faced by r	nost of the fresh water or-
	ganisms	
	1) Exosomosis	2) Endosmosis 3) Iso-
	tonic problem.	4) Diffusion
185.	Which of the following	structures help in osmo-
	regulation of fresh wate	r protozoans
	1) Water vacuoles	2) Food Vaculoes
	3) Kidney 4) Co	ntractile vacuoles
186.	Well developed glomer	ular kidney is found in
	1) Esturaine fishes	
	2) Marine bony fishes	
	3) Fresh water bony fis	hes
	4) Brackish water fish	

187.	To maintain osmotic bal	ance freshwater fishes ab-						
	sorb salts from the wate	r through						
	1) Skin 2) Green gla	and						
	3) Mouth 4) Chloride cells in gills							
188.	Identify the desert lizard	d in which body is coverd						
	by hygroscopic skin							
	1) Macropus	2) Ornithorhyncus						
	3) Thorny devil	4) Varanus						
189.	In which of the followin	g the skin is hygroscopic						
	1) Varanus	2) Calotes						
	3) Kangaroo	4) Moloch						
190.	In which of the following	ganimals more methods of						
	water conservation are	seen						
	1) Marine animals	2) Fresh water animals						
	3) Terrestrial animals	4) Desert animals						
191.	Fat storage organ in Car	mel						
	1)Liver	2) skin						
	3) Hump	4) Entire body						
192.	Insects over comes wate	er problem by having						
	1) Jointed Legs 2) Chiti	inous exoskelton						
	3) Trachea 4) Antenn	nae						
193.	The animal that can wi	thstand very high loss of						
	water from body is							
	1) Man 2) Camel 3) Ka	angaroo rat 4) Lizard						
194.	The animal that depend	s on metabolic water						
	1)Camel	2) Calotes						
	3) Dipodymys	4) Lizard						
195.	An embryo is protected	l from the dehy						
	dration by							
	1)Chorion	2)Amnion						
	3)Allantois	4)Yolksac						
196.	A freshwater fish is a							
	1) stenohaline with aglor	merular kidney						
	2) euryhaline with glor	nerular kidney						
	3) stenohaline with glo	omerular kidney						
	4) euryhaline with aglo	omerular kidney						
197.	Salt glands of marine a	inimals help in						
	1) addition of salts							
	2) elimination of salts	3) 1 and 2						
	4) water conservation							
198.	Deep-sea fishes shoul	d develop an						
	important adaptation f	or tolerating						
	1) high temperature	2) high pressure						
100	3) low temperature	4) low pressure						
199.	Sea birds are							
	1) eurythermal and be	ar salt glands for the						
	elimination of excess s	alts						
	2) stenothermal and b	ear salt glands for						
	the collection of salts 2 and 1							
	3) eurythermal and be	ar salt glands for the						
	collection of salts	oon colt alor de fai						
	4) stenothermal and b	ear san giands for						
	the emmination of exce	58 Salts						

200.	Contractile vacuole of a freshwater <i>Amoeba</i> helps in overcoming the problem		
	created by		
	1) endosmosis 2) exosmosis		
	3) 1 and 2 4) diffusion		
201.	Physiological uraemia is developed in		
	some marine cartilaginous fishes to		
	1) overcome unfavourable conditions		
	2) migrate from marine to freshwater		
	3) maintain isotonic medium with seawater		
	4) collect more water into the body		
202.	Chloride cells of a freshwater fish help in		
	the		
	1) removal of salts from the body		
	2) collection of salts from water		
	3) removal of nitrogenous waste		
	4) collection of nutrients from water		
203	The ducts of salt glands in giant turtle open		
205.	near the		
	1) nostrils 2) eves		
	$\begin{array}{c} 2) cycs \\ 3) cloaca \\ \end{array} \qquad \begin{array}{c} 4) cars \\ cars \\ \end{array}$		
204	To conserve the water insects and arachnids		
204.	everete		
	1) guanine and uric acid		
	2) uric acid and guanine		
	3) urea and uric acid		
	4) uric acid and urea		
205	During day time the camel		
205.	1) releases out urine as thin liquid		
	2) behaves like a "heat sink"		
	3) exhausts the stored energy of hump		
	4) changes the shape of RBC oval to spherical		
206	Identify the mismatched combination		
200.	1) Neotoma – Wood rat – Depends on the		
	water in food		
	2) $Dinodomvs - Kangaroo - Depends on the$		
	metabolic water		
	3) <i>Camelus</i> - Camel – Efficient kidneys		
	4) Moloch - Thorny devil - Hygroscopic		
	system in the skin		
207	Which of the following fishes store urea in		
207.	their blood		
	1 marine cartilaginous fishes		
	2 marine bony fishes		
	3 fresh water cartilaginous fishes		
	4 fresh water bony fishes		
208	A fish that lives in gelatinous cocoon in summer		
200.	A fish that lives in gelatilous cocoon in summer		
	1 Lenisosteus ? Anguilla		
	3 Hilsa 4 Protonterus		
209	From the following fish identify the one with a		
<u> </u>	aglomerular kidnev? (FAMCET-2008)		
	1) Sphyrna 2) Tilania		

3)	Cirrhinus	
5)	Cirimius	

2

3)Ketoneuria

4) Exocoetus

LEVEL-II				
210.	Identify the correct statement regarding water			
	1) Increase of one atmospheric pressure for			
	every 1 metres depth			
	2) Decrease of	one atmosp	heric pressure for	
	every 10 metre	s depth.	orio progguro for	
	s) increase of c	s denth	eric pressure for	
	4) Decreases of	s depui. f one atmosi	ohere pressure for	
	every 100 mete	ers depth	pressure for	
211.	Match the follo	wing and ch	oose the	
	correct combination	ation		
	List - I	List - II		
	a) Hilsa	i) Summer	sleep	
	b) Protopterus	ii) Oval RB	С	
	c)Camelus	iii) Cyclom	orphosis	
	d) Daphnia	iv)Anadror	nous fish	
		v) Hypoxia		
	1) a b c d	2)a b c d		
	iv ii i iii	viiiii		
	3)a b c d 4)a b c d			
	iv i ii iii	viiiii		
212.	2. The following are the statements about adaptation			
	to water problen	ns of <i>fresh v</i>	vater fishes.	
	1. Water potential	of body flue	ds 1s h1gher	
	ii Erach water	rounding wa	iter	
	alomerular kidne	v to elimina	te large quantities of	
	water in the form	of dilute uri	ne.	
	iii.Chloride cells in the gills actively absorb salts from			
	water to compensate their loss through urine .			
	Choose the correct statements :			
	1. i , ii only 2	. i and iii o	only	
	3. iii only 4	. ii and iii o	only	
213.	Chloride cells in	the gills can	absorb or excrete	
	salts depending	on the <i>cond</i>	itions / periods in	
	1.Salmon	2.H Salmon Hi	ilsa and Anguilla	
214	Salt excreting ora	nds in marin	e turtles is useful	
217,	for	ndo in marm	e turties is userui	
	1) Avoiding cold	2)E	expressing grief	
	3) Elimination of	sodium chlo	ride (Salty fluid)	
	4) Expressing joy	7	/	
215.	Retaining Urea in	the blood, b	y some Cartilaginous	
	fishes to regulate their water content is			
	1) Physiological	Uraemia	2)Haematuria	

4)Ischemia

 216. (A): Conservation of water is very crucial in the case of animals living in deserts. (R): Desert animals like camels excrete urine as thick syrup. 217. Assertion (A): Thorny devil consumes water from the dew by means of capillary action through general body surface Reason(R): Thorny devil and Dipodomys have a hygroscopic skin 218. Assertion (A): Entry of water into freshwater fish is common Reason (R): Water potential of body fluid is less relative to the surrounding water for 	 substances III rd process is - The slower mineralisation of humus. Decomposers - Converts complex molecules of dead organisms in to simple & reusuable molecules. All living organisms in an ecosystem together called - Biotic factors Composition of biotic community A biotic community consists of - producers consumers and decomposers The ultimate source of energy for the functioning of an ecosystem is - The sun Green plants and phytoplankton trap the radiant solar energy and synthesises in to - Chemical energy
freshwater fish 219. Even after losing the following percentage of water, the camel survives and starts to sweat above the following temperature respectively 1) 40% and 45°C 2) 40% and 41°C	 Informatic surplut bacteria obtain energy by the break down of chemical substances and are called Chemoautotrophs First trophic level in an ecosystem is occupied by Producers Animals feeding on autotrophs or their products either directly or indirectly are called
 3) 41% and 50°C 220. Which of the following exhibits catadromous migration? 1) <i>Hilsa</i> 2) <i>Anguilla</i> 3) Salmon 4) <i>Protontarus</i> 	 Consumers or Macro consumers Animals which feed on producers directly are called -Primary consumers/herbivores Zooplankton constitute - Primary consumers Animals that feeding on herbivores are called
 221. Salmon fish is 1) euryhaline and eurythermal 2) euryhaline and stenothermal 3) stenohaline and eurythermal 4) stenohaline and stenothermal 	 Primary carnivores /Secondary consumers Animals feeding on secondary consumers are called tertiary consumers/Secondary Carnivores Animals which are not eaten by other animals (Eg: Hawks, Lion, Tigers) are called
BIOTIC FACTORS (producers, consumers, decomposers and interactions)	 body surface from the dead bodies are - Saprotrophs. Organisms which ingest detritus as food are called -Detritivores
Living organisms in an ecosystem are ategorized in to - 3 main trophic levels 1) Producers (2) consumers 3) Decomposers In an oak forest, the oak trees affect the soil by - Removing waters nutrients Ecologically a biotic community consists -	 Mineralisation of humus is carried by - Mineralisers Decomposers are also called - Microconsumers of ecosystem Decomposers are responsible for recycling the dead organisms and waste materials and - Release energy into the ecosystem Producers cannot exist forever in the absence of - Decomposers
 Producers (2) consumers Decomposers Third tropic level in a food chain - Frogs, dogs, foxes, wolves of terrestrial ecosystem fishes of the acquatic ecosystem Tertiary consumers are - Secondary carnivores (Climax cnsumers in most cases) Ex: of Climax consumers - Hawks, Vultures, lions, tigers of terrestrial ecosystem) Ex: of climax consumers of Large predatory fishes Decomposition of organic matter includes 3 phases In the Ist phase particulate detritus is formed by The action of saprotroph's & detrivores to convert detritus in to humic 	 Characaters of a biotic community The kinds of organisms present in biotic community are called Species composition. A few species which are dominant in terms of number and biomass are referred to as Dominant species The species which greatly influence biotic community relative to their abundance in biomass or number are said to be - Keystone species Species like Mycorhizal sps absorb nutients from soil and organic residue and are called Link species. Insects, as they are useful in pollination referred to as Critical link species. The transition zone between two biotic communities is called Econometry

	Dominant species are - Pine trees in taiga and grass in grass lands Keystone species are - Fig trees in tropical	223.	Producers can't survive 1)Animals 3) Decomposers	in the absence of 2) Consumers 4) Herbivores
	forests (as they produce large number of fruits) Ecosystem is seriously influenced by - Removal of either keystone species (or) dominant species. Ex: of ecotone is - The zone between forest and	224.	Assertion (A) : Sulpher chemoautotrophs Reason (R): They obtain chemical substances	bacteria are described as
•	grass land. The increase in the number of organisms and diversity of organisms in ecotone is called - Edge effect.	225.	Zooplankton comes und 1) Carnivores 3) Producers	ler 2) Herbivores 4) Decomposers
•	The species in ecotone are called - Edge species	226.	Hawks, Vultures, Lions	and Tigers constitute
	Interactions		2) Drimorgy and symposize	
•	Lemna gibba dominates Spirodela polyrhiza and is		2) Primary consumers	
	called - Competetive exclusion		4) Tertierry consumer	rs
	When in a same medium	227	4) remary consumers	no ononor og food
	competitive exclusion is observed between aquatic arouds called duckweed or - Spirodela and Lemna	227.	1) Detrivores	2) Consumers
	(Acquatic aroids)		3) Decomposers	1) Producers
	Lemma gibba excludes -Spiro dela polyrhiza	228	Deers Girafees Cows	Goats Rabbits Horses
•	Chemical inhibition of one species by another is	220.	are examples to	, Obais, Rabbits, 1101303
•	Called - Allelopathy Different species interacting with one another and		1) Primary consumers	
•	live together intimately and is called - Symbiosis		2) Secondary consumer	° S
•	Association between two organisms which are		3) Tertitary consumers	5
	metabolically dependent on each other and both are		4) Decomposers	
•	benefited is called - Mutualism	229.	Which of the following	is not eaten by any other
•	other one is unaffected is called - Commensalism		animal in a food chain	5 5
•	Association in which one is living at the expense of		1) Producers 2) Pr	rimary consumers
	the other is called - Parasitism.		3) Secondary consumer	'S
	In amensalism one is harmed and other is		4) Tertiary consumers	
•	Interaction in which one organism is killing the other	230.	Organisms which play a	key role in the cycling of
	for the food is called - Predation		minerals in the ecosystem	n.
•	Conduit for the transfer of energy in a food chain is		1) Plankton	2) Parasites
•	Population size of the prev is limited by-predation		3) Decomposers	4) Carnivores
•	Important adaptations in animals to avoid predation	231.	Movement of energy and	d nutrients from one feed-
	are - camouflage, venomous nature, spiniscence,		ing group of organisms	s to another in a series is
•	minicry, warning coloration etc.		called:	2) East shain
•	predators is called - Mimicry		3) Food link	4) None of these
•	The type of defenceless organism (mimic)	232	Chemical inhibition of or	e species by another is
	mimicking other organism with defence (model) is	232.	called	is species by unother is
•	The process in which the mimics share the same		1)Competition exclusion	
	defence mechanism as model is		2)Allelopathy	
	-Mullerian mimicry		3)Batesian Mimicry	
	BIOTIC FACTORS		4)Mullerian Mimicry	
	(PRODUCERS, CONSUMERS, DECOMPOSERS AND INTED A CTIONS)	233.	One organism is harmed	and the other
	INTERACTIONS) I.FVFI_I		is unaffected in the cas	se of
222	Basic source of energy in an ecosystem is		1)Amensalism	2)Commensalism
	1) Tertiary consumers		3) Parasitism	4) Mutualism
	2) Primary consumers	234.	Primary carnivore is the	ne food for
	3) Primary producers		1) secondary consume	er
	4) Secondary consumers		2) tertiary consumer	
	· · · ·		3) primary consumer	4) herbivore
		1		

235.	Batesian mimicry is sho	wn by	1	. ii only
	1) viceroy butterfly		3	3. ii and ii
	2) monarch butterfly		244. 0	Compete
	3) pines of taiga biome		1) Spirod
	4) fig trees of tropical for	orests	2	2) Spirod
236.	Read the following about	ut ecological succession	3	B) Vicero
	of xerosere and arrange	e them in a sequence	2	l) Spirod
	A. Forest stage	B. Moss stage	245.	Study the
	C. Herbaceous stage	D. Lichens stage		decompo
	E. Shrub stage			i)Detrivo
	1) A-B-C-D-E	2) D-C-B-E-A		ii) Proce
	3) D-B-C-E-A	4) A-B-D-E-C		iii) Deco
237.	Critical link species that	thelp in pollination and		comple
	dispersal of seeds for p	lants are		iv) sapro
	1) mycorrhizal species	2) insects		genera
	3) lizards 4) <i>Lemna</i>	and Spirodela		The corr
238.	A branching linking bet	tween a predator is		1) i and i
	feeding on more than or	ne type of prey		3) i.ii and
	organisms is		246.	Match t
	1) iota link	2) gamma link		answer
	3) alpha link	4) lambda link		List – I
239.	A branching linking bet	tween a prey is predated	A. Eco	otone
	by more than one type of	of predator organisms is	_	
	1) iota link	2) gamma link	B. Co	npetitive
• • •	3) alpha link	4) lambda link	C.Alle	elopathy
240.	"Edge species" occur 1	n 11 1: :	D I '	
	1. between epilimnion a	nd hypolimnion	D. Lin	k species
	2. the thermocline regio	n		
	3. the hypolimnion			1) 4 1
	4. the ecotone			1) A-1
	IFVFI	п		2) A-4
241.	(A): The highest popul	lation in any ecosystem		3) A - 4
2	belongs to decomposer	's	247	4) A-4
	(R) : They recycle min	erals in any ecosystem	247.	Read u
242.	'Competitive exclusio	<i>n</i> ' is shown by		I In hy
	1. Spirodela polyrhiza	with reference		subme
	to <i>Lemna gibba</i>			II In v
	2. Lemna gibba with re	eference to		herbac
	Spirodela polyrhiza			III Me
	3. Pine plants with refer	rence to grass		the hab
	plants			IV. The
	4. 'Edge species' in an	'ecotone'		xeroce
243.	Spot the <i>correct</i> statem	ent among the		1) I. II.
	following			3) I. II
	i. Monarch butterfly s	hows Batesian		-) -,
	mimicry			FC
	ii. Viceroy butter fly ex	hibits Mullerian	FO	
	mimicry	· • .	rU	UDCH
	111. Viceroy butterfly mi	mics a <i>poisonous</i>	•	The proc
	'model'	(1 1 0		predicta
1	v. If two <i>mimics</i> sha mechanism it is called N	Mullerian mimicry		commun
		•		

3.ii and iii only 4. iii	and iv only				
4. Competetive exclusion	is observed between				
1) Spirodela and Lemna					
2) Spirodela and monar	2) Spirodela and monarch Butterfly				
3) Viceroy Butterfly and	1 Lemna				
4) Spirodela polyrhiza a	and viceroy butterfly.				
5. Study the following sta	tements about				
decomposers.					
i)Detrivores ingest detr	ritus as food				
ii) Process of mineralis	ation of humus is slow				
iii) Decomposers conve	erts simple molecules into				
complex reusable mo	lecules				
iv) saprotrophs absorb	s substances through				
general body surface	from the dead body.				
The correct combination	on is				
1) i and iii only 2) ii a	and iii only				
3) i.ii and iii only 4) i,ii	and iv only				
6. Match the following a	and choose the correct				
answer					
List – I	List – II				
Ecotone	1. Lemna &				
	Spirodela				
Competitive exclusion	2. Key stone species				
Allelopathy	3. Mycorrhizal				
	species				
Link species	4. Edge effect				
-	5. Chemical				
	inhibition				
1) A-1, B-4, C-5 and	d D-2				
2) A-4, B-5, C-1 and	d D-2				
3) A-4, B-1, C-5 an	d D-3				
4) A-4, B-1, C-5 and	d D-2				
7. Read the following al	bout ecological succession				
and choose the correct	ct combinations				
I. In hydrocere ecolog	gical succession, the				
submerged stage is th	e pioneer community				
II. In xerecere ecological succession, the					
herbaceous stage is th	ne pioneer community				
III. Mesosere is the e	III. Mesosere is the ecological succession in				
the habitat which is moderate in water					
IV. The community the	hat cannot be replaced in				
xerocere is the forest	tstage				
1) I, II, III only	2) I, III, IV only				
3) I, II only	4) III, IV only				
-,,,	, , _				

2.iii only

ECOLOGICAL SUCESSION, FOOD CHAINS, FOOD WEB, PYRAMIDS, FUNCTIONAL ASPECTS

The process of occurance of gradual, orderly and predictable changes in the composition of communities towards a climax type is called

Ecological succession.

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- The succession which begins on an area which is not in habited by any biotic community to establish a climax community is -**Primary Succession**
- The succession that begins in an area from which a community was removed to establish a climax community is called Secondary Succession
- An inorgamic environment which gets predominated by autotrophs is called

- Autotrophic Succession

Polluted areas with more decomposed matter gets dominated by heterotrophs is called

Heterotrophic Succession

The first community that is established either in primary or secondary succession is called

Pioneer Community

- Climax community is established after the Stabilisation of environment Climax community can not be replaced
- The ecological succession that starts on barren Rocks or in places where there is extreme deficency of water is said to be

Xerosere

- The ecological succession that starts in the habitat which is rich in water is called Hydrosere
- The ecological succession in the habitat which is moderate in water is called -Mesosere In ecological succession finally

- Climax stage, woodland stage is established

Food Chains & Food Web

- The chain of organisms existing in any natural community, through which energy is transferred is called **Food Chain**
- Every predator food chain begins with **autotrophic** organisms (mainly green plants)
- Any organism that cannot produce its own food and depends on another for its nutrition is called a

Consumer

- The successive levels in the food chains of a community are referred to as trophic levels
- The food chains in which grazing animals play an important role in the transfer of energy to carnivores are called -**Grazing food chains**
- Grazing food chains are normally with 4 to 5 trophic levels in the chain and are linear.

Examples of grazing food chains:

In terrestrial ecosystem:

- i) Grass \rightarrow Deer \rightarrow Tiger
- ii) Grass \rightarrow Grasshopper \rightarrow Frog \rightarrow Snake \rightarrow Hawk

iii) Rosebushsap \rightarrow Aphids \rightarrow Spiders \rightarrow Smallbirds \rightarrow Hawk In aquatic ecosystem

phytoplankton \rightarrow zooplankton \rightarrow small fish \rightarrow squid \rightarrow seal

- The top order carnivores which are not consumed by other predators are -Climax carnivores
- Grazing food chains are also called

- Predator food chains

The food chain in which smaller sized parasitic organisms derive nourishment from larger host organisms are called **Parasitic food chains**

- Dead organisms of grazing food chains form source of energy for **Decomposers**
- Microorganisms which live on dead organic matter are called **Saprotrophs**
- Organisms that feed on decomposing organic . material, detritus are called

detritivores or primary detritus feeders.`

Humus is converted to inorganic minerals by

Mineralisers

Carnivores feeding on detritivores are called • secondary detritus feeders.

Examples of detritus food chains

Leaf litter \rightarrow Earthworms \rightarrow Birds \rightarrow Hawks

- Dead animals \rightarrow Flies & Maggots \rightarrow Frog \rightarrow Snake Animals that consume highly varied diets and act as secondary, territory, quarternary and higher Carnivores consumers are
- Animals which feed on organisms like plants animals and fungi of different trophic levels are called

Omnivores

- The cross linking of different trophic levels of different food chains forming a mesh which is called Food web
- Stability of ecosystem is maintained by Food web
- A biotic community is said to be stable where there is more number of alternative pathways
- A direct linking between prey and predator without - Iota link any branching is
- A branching link in which a predator feeding on more than one type of prey organisms is Lambda link
- A branching link in which one prey organisms is • predated by more than one type of predator is -Gammalink

Ecological Pyramids

- Ecological pyramids were firsrt described by **Charles Elton (1920)**
- Representation of trophic structure(feeding relationships) and the trophic function(efficiency of energy transfer through biotic components) of an ecosystem is

ecological pyramid or tropic pyramid

- Graphical representation designed to show the numbers or biomass or energy at each trophic level in an ecosystem is **Ecological** pyramid
- Numbers of organisms decrease gradually in an ecosystem from first trophic level to the last trophic level, thus shape of pyramid of numbers is

Upright triangular

- Size of the body increases from one trophic level to • **Higher level** the
 - Pvramid of numbers is

Inverted in case of parasites

- Relationship between biomass and trophic level by quantifying the amount of biomass present at each trophic level is represented as Pyramids of biomass
- Dryweight of organisms of each trophic level at a given time is known as - Biomass .
 - Generally, shape of the pyramid of biomass is Upright triangle
 - Pyramid of biomass in an aquatic ecosystem is

-Inverted

- Shape of pyramid of energy is upright triangle
- Pyramid of energy indicates loss of energy at each trophic level from producer level to climax carnivores Base of the pyramid (on Ist tropic level of pyramid

- Producers formed by In a lake ecosystem Ist tropic level is mostly formed - Phytoplankton by

In a lake ecosystem IInd tropic level is mostly - Zooplanktons formed by In a lake ecosystem IIIrd tropic level is mostly

formed by - Small fishes In a lake ecosystem Climax tropic level is mostly formed by Large fishes

An example of Inverted pyramid is

- single tree - birds, squirrels, many parasites Pyramid of energy shows

- loss of energy at each tropic level Large amount of energy is available at

- Producer level

Less amount of energy is available at - Climax carnivore level

Less biomass and more energy is in Phytoplankton of aquatic food chain due to

- Highturnover

Functional aspects of an ecosystem

- Main processes that are related to the field of ecosystem ecology are energy transformations & biogeochemical cycling
- Energy that enters the ecosystem is- Light energy
- Light energy is converted to chemical/potential energy by the process - Photosynthesis
- Potential energy is converted to- Kinetic energy
- Biological systems get closed if there is no continuous entry of - Solar energy
- Regarding the energy flow, the earth is considered as an **Open system**
- Regarding the flow of elements in an ecosystem, the earth is considered as Closed system
- Cycling of elements occurs endlessly in an ecosystem between -Biotic & abiotic factors
- The elements whose non-supply tend to limit biological activity are called nutrients

Biogeochemical Cycles:

The pathway by which a chemical element or molecule moves through both biotic and abiotic components of an ecosystem is called

-Biogeochemical cycles

- All biogeochemical cycles are closed systems.
- The place where chemicals are held for long periods of time at one place in biogeochemical cycle is called -Reservoir
- The place where chemicals are held for short periods **Exchange** pools are-
- Reservoirs & Exchange pools are generally - Abiotic & Biotic factors respectively
- The period of time that a chemical is held in one place is called its -Residence time.
- Reservoir of gaseous cycles like Nitrogen, Carbon -Atmosphere etc is

- . Reservoir of sedimentary cycles like sulphur, phosphorus etc are -Sedimentary rocks Nitrogen cycle
- The very important element of proteins, DNA & • RNA, Nucleic acids is -Nitrogen
 - Nitrogen is fixed in the form of Nitrates
- ٠ Nitrogen is fixed in soil by Azatobacter •
 - Nitrogen is fixed in the roots of legumes by

Rhizobium

• In water cyanobacteria act as

Nitrogen fixing bacteria

- Nitrogen is changed into ammonia by ammonifying bacteria
- Nitrosomonas (Nitrite bacteria) present in the soil converts Ammonia into nitrite Nitrobactor (Nitrate bacteria) converts
 - Nitrites to nitrates
 - Pseudomonas & Clostridium (denitrifying bacteria) Nitrates into nitrogen convert

Phosphorus Cycle

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- Atmosphere does not play a role in the movement of phosphorus. because they are present as solids -On the earth
- Phosphate normally occurs in nature as part of a **Phosphate** ion
- Most of the phosphates are found in -Ocean

Sediments or in rocks

• Phosphates are carried back to the oceans by weathering of rocks and from soil as runoff Phosphorus occurs in nature as

- Orthophosphate (PO4)3

Geological process which brings ocean sediment on to land are - Geological up heavals

Energy Flow

- The study of the laws of energy and its • transformation is called - Energetics
- The standard international unit of energy is the **joule**
- Energy flow in an ecosystem is -Unidirectional •
- The weight or quantity of organisms in an area at a given moment is called -Standing crop
- The total amount of organic material produced by • living organisms of a particular area within a set period of time is called -**Productivity**
- The rate at which biomass is produced by organisms • which convert inorganic substrates into complex organic substrates is called -Primary productivity .
 - Organisms like bacteria convert chemical energy to biomass by --Chemosynthesis
 - The total primary productivity is known as
 - -Gross Primary productivity (GPP)
 - Energy stoted in plant tissues is considered as -Net Primary productivity
- Net primary production = Gross primary production--NPP = GPP - Renergy utilised for respiration

The rate at which consumers of an ecosystem convert the chemical energy of their ingested food material into their own body substance (biomass) is called -Secondary productivity •

The percentage of production of one trophic level that is ingested by the next higher trophic level is called **Exploitation efficiency**

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•	The percentage of energy ingested that is actually absorbed across the wall of gut is called	253.	In a pond ecosystem lan 1) Producers 2) tertia	ge fish is ary carnivore
•	Assimilation efficiency of herbivores is less than that		3) Primary carnivores	-
	of carnivores due to the presence of relatively	254	4) Secondary carnivore	S 1 1 ¹ C 1 C
•	indigestible cellulose in their food material Exploitationefficiency	254.	1) Producers	2) Consumers
	= food ingested		3) Decomposers	
	total food available for ingestion		4) Producers, Consume	ers and Decomposers
	food directed	255.	In a food chain herbivor	res form
•	Assimilation efficiency = $\frac{1000 \text{ digested}}{\text{total food ingested}} \times 100$		1) Primary producers	
•	The total plant material ingested by herbivoreminus		2) Secondary consumers3) Primary consumers	rs
	the materials lost as faces is called		4) Tertiary consumers	
•	- Gross secondary production (GSP)	256	Identify the secondary of	arnivores
•	secondary production (NSP)	200.	from the following (graz	zing food chain)
•	Percentage of energy lost in the transformation of		1)Hawks	2)Small birds
	absorbed solar energy to chemical energy by		3)Spiders	4)Aphids
	producers is -as high as - 99%	257	Spot the ' <i>Third Tronh</i>	ic I ovol ' in the
•	The efficiency of transfer of energy from one trophic	237.	food chain involving gr	asshopper shrew
•	level to the higher trophic level is -10%		nlant and a carnivorous	owl
•	transferred to next higher trohic level in an			2 shrew
	ecosystem is referred to as -10% rule		3 plant	1 grasshopper
	(Lindermann's trophic efficiency rule)	258	J. plan In a food web a direct	ink between prev and
•	Percentage of net primary production that is	250.	nredator without any br	anching
	is called Tranhic efficiency of herbivores		1) Lambda link	2) Gamma link
	LEVEL-I		3) Jota link	A) Link species
248	The transition zone between the two	259	The ultimate trophic lex	rel of a food chain is made
210.	biotic communities is known as	257.	up of	er of a food chain is made
	1) Mesosere 2) Key stone species		1) Decomposers	2) Herbivores
	3) Ecotone 4) Sejonhytes		3) Secondary carnivore	
249	The succession begins in an area		4) Top carnivores	.3
>.	which is not inhabited by any biotic	260	Finerow source of detrit	is food chain is
	community to establish a climax	200.	1) Dead Organisms	2) Decomposer
	community is		3) Phytoplankton	4) Zooplankton
	1) Primary succession	261	Food web consists of	
	2) Secondary succession	201.	1) One food chain	2) Two food chains
	3) Secondary consumers		3) Many food chains	2) 100 100 u entaños
	4) Primary carnivores		4) Inter linking food cha	vins
250	Certain bacteria such as iron and sulphar	262	A branching link in w	hich predator feeding on
200.	bacteria obtain energy by breaking down	202.	more than one type of n	revorganisms is
	chemical substances these are described as			
	1)Sanratronhs 2)Chemoheteratronhs		1) lota link	2) Gamma link
	2)Harking and A)Charge and the sha		3) Alpha link	4) Lambda link
	3)Herbivores 4)Chemoautotrophs	263.	Ecological pyramids we	ere first introduced by
251.	"Lichen – Moss – Herb – Shrub"		1) Charles Elton	2) Carless Darwin
	succession is referred to as	244	3) Ernest Hackel	4) Winie Edward
	1.Mesosere 2.Xerosere	264.	I ne functional aspect of $1 \times 1 $	I an ecosytem
0.50	3.Hydrosere 4. Metasere		1) Energy flow 2) Cycl	ing of nutrients
252.	Chemosynthetic and Indigo sulphur bacteria are	265	3) Sunlight 4) Abic	ouc factors
	examples to	265.	Ultimate source of ener	gy in an ecosystem
	1) Heterotrophs 2) Saprotrophs		1) Glucose	2) sunlight
	3) Herbivores 4) Autotrophs		3) Proteins	4) A. I.P.

266.	Xerosere begins with the c	community stage is	276.	Third to
	1)Lichen stage 2	2)Moss stage		1) seco
	3)Herbaceous stage 4)Shrub stage		carnivo
267.	The ecological succession	in the		2) prim
	habitat where there is ex-	treme		3) tertia
	deficiency of water is said	l to be		carnivo
	1)Xerosere 2	2)Hydrosere		4) clim
	3)Mesosere 4	Saprosere	277	The py
268.	A succession that begins	in a <i>polluted</i>	2, ,.	1) pyra
	<i>area</i> containing mostly de	ecomposed matter is		2) nyra
	1. a secondary succession)		$\frac{2}{9}$ pyra $\frac{3}{9}$ pyra
	2 an autotrophic successi	on		$\frac{3}{pyra}$
	3 a heterotrophic success	ion	270	Obcom
	4 a verosere		270.	Observ
269	$Grass \rightarrow Grasshopper _$	Frog ->		Grass -
207.	Viluss / Olusshopper /	The suitable animal in		<u> </u>
	the blank of above food of	hoin is		The su
	1) robbit	2) door		food ch
	2) snaka	1) leite		1) rabb
270	5) Shake	4) KILE		3) frog
270.	1) detrition and another for	d shaina	279.	The an
	1) detritus and grazing loc			ordinar
	2) primary and secondary	productions		1) clim
	3) arrangement of trophic	levels as a food		2) top o
	pyramid	• •		3) clim
071	4) effect of temperature of	n animals		4) prim
271.	Trophic levels are formed	by the	280.	In a det
	1) animals only	2) plants only		1) prim
	3) organisms linked in foo	d chain		2) seco
	4) detrivorous animals onl	У		3) prod
272.	If the pyramid of numbers	will become invert,	281.	Which
	1) one of the trophic level	s is withdecomposers		1) pyra
	2) one of the trophic level	s is with parasites		2) pyra
	3) one of the trophic level	s is with bacteria		$\frac{2}{9}$ pyra 3) pyra
	4) one of the trophic level	s is with		$\frac{3}{2}$ (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
	decomposers or mineraliz	ers		+) 1 an
273.	If a lizard feeds on the gra	sshopper, it is	282	Match th
	considered to be		202.	apphingt
	1) primary consumer and	secondary carnivore	Б	Comoina
	2) secondary consumer an	nd primary carnivore	Fa	actors
	3) primary consumer and	herbivore	a) Pri	mary con
	4) secondary consumer an	nd herbivore	b) Se	condarv c
274.	The percentage of the pr	roduction of one	a) Ter	tionycone
	trophic level that is inge	sted by the other		
	trophic level above is re	ferred to as	a) Pro	oducers
	1) assimilation efficiency	,	e)De	composed
	2) trophic efficiency			1) a b c
	3) exploitation efficiency	7		
	4) absorptive efficiency			V 11 111
275.	Animals which feed on a	organisms belonging to		3) a b c (
	all trophic levels are call	ed		11 i iii iv
	1) secondary carnivores		283.	The follo
	2) tertiary carnivores			i. A food
	3) ominovores 4) clim	ax consumers		are relate
				ot tood.

276.	Third trophic leve	el organisms are
	1) secondary con	sumers which are primary
	carnivores	
	2) primary consu	mers which are herbivores
	3) tertiary consur	ners which are secondary
	carnivores	
	4) climax consun	ners which are saprophytes
277.	The pyramid is in	verted in
	1) pyramid of bio	mass of grazing food chain
	2) pyramid of nur	nbers of grazing food chain
	3) pyramid of ene	rgy of grazing food chain
	4) pyramid of nur	nbers of parasitic food chain
278.	Observe the follo	wing grazing food chain
	$Grass \rightarrow Grassh$	opper \rightarrow —— snake
	\longrightarrow Hawk	
	The suitable anim	al in the blank of above
	tood chain is	2
	1) rabbit	2) deer
270	3) Irog	4) Kite
279.	I ne animais of a	trophic level that are not
	1) alimax produce	ned by other predators are
	2) top order deco	
	2) top order dect	onder carnivores
	4) primary consu	mers
280	In a detritus food	chain the earthworms are
200.	1) primary detritu	is feeders
	2) secondary det	itus feeders
	3) producers	4) mineralizers
281.	Which of the food	d pyramids is always upright?
	1) pyramid of nur	nbers
	2) pyramid of bio	mass
	3) pyramid of ene	ergy
	4) 1 and 2	
	LE	VEL-II
282.	Match the followin	ig and choose the correct
	combination	
Fa	actors Type	of biotic Examples
a) Pri	imary consumers	i) Bacteria and fungi
b) See	condary consumers	ii) Foxes and wolves
c) Ter	rtiary consumers iii) vultures and hawks
d) Pro	oducers in	y) Phytoplankton
e)De	composers v) Deer and Rabbits.
	l)abcde 2)abcde
	v ii iii iv i i	iii ii iv v
	$3) a b c d e \qquad 4$) a b c d e
	ii i iii iv v	v iii ii iv i
283.	The following state	ments are related to food chain.
	1. A food chain is the are related to each	the sequence of organisms that other for their source

ii. Every food chain begins with the autotrophic tiary consumers organisms. The correct combination is: iii. The successive levels in the food chains of 1) i and ii are correct2) i and iii are correct a community are referred to as trophic levels. 3) ii and iii are correct 4) All are correct The correct combination is: 290. Arrange the following organisms in a 1) i and ii are correct sequence with regard to a grazing food chain 2) i and iii are correct A) producer B) Climax carnivore 3) ii and iii are correct C) Secondary grade consumer 4) i,ii, and iii are correct 284. The following statements are about grazing food D) Secondary carnivore chain. E) organisms of second trophic level i.Grazing animals play an important role in this type of food chain. 1)A-C-D-E-B 2)A-E-C-D-B ii. The grazing food chains are linear and with 3 to 3)A-D-E-C-B 4)A-C-E-D-B 5 links in the chain. 291. A 'branching link' between food iii. The grazing food chains are also called predator chains in which 'a predator feeding on food chains. The correct combination is : more than one type of prey' in a 'food 2)Only ii is correct 1) i and ii are correct web' is referred to as 4) i, ii and iii are correct 3) only iii is correct 1.Lambda link 2. Jota link 285. Third trophic level organisms are 3.Gamma link 4.predator link 1)Secondary consumers which are primary 292. Graphic representation of decreasing of amount carnivores of energy of each tropic level in the form of pyra-2)Primary consumers which are Herbivores mids is called 3)Tertiary consumers which are secondary 1) Pyramid of numbers carnivores 2) Ecological pyramids 4)Climax consumers which are saprotrophs 3) pyramid of biomass 286. Choose the wrong statement from the following 4) Energy pyramids 1) The successive levels in the food chains of a 293. (A): The pyramid of energy provides most efficommunity are referred to as trophic levels cient picture of any ecosystem 2) Detritivores may be eaten by the carnivores (R): The amount of energy utilised by herbivores 3) The food web maintains the stability of from the food they take is 10% and flow of energy is unidirectional ecosystem 1. Both A, R are true, R is correct explanation to 4) A direct linking between prey and predator А without any branching is gamma link 2. Both A, R are true, But R is not correct expla-287. In the Food chain' involving "dead nation to A animal, maggot, owl, snake, frog "in 3. Only A is true, R is wrong which 'maggot' is not a part of the food 4. Only R is true, A is wrong of owl or snake, the 'secondary detritus 294. The total amount of glucose produced in plants of feeder' is the ecosystem by photosynthesis is called 1. owl 2. snake 1) Net primary production 3.frog 4. dead animal Energy spend at first tropic level In the 'food chain'- "leaf litter – earthworm 288. 3) Gross primary production 4) Net second--*birds*-*hawk*" the 'primary detritus feeder(s) ary production is /are the 295. The end products of respiration are 1. earthworm 2.bird 1) $C_6 H_{12} O_6, O_2$ 2) CO_{2}, O_{2} 4. earthworm and bird 3. hawk 3) Energy, O₂ 4) CO_2 , H₂O, energy 289. The following statements are related to food 296. In a lake ecosystem, the larger fishes are web. 1) Primary consumers occupying second trophic i. The cross linking of different trophic levels level of different food chain form a mesh or web. 2) Secondary consumers, occupying third ii.Cross-linked food chains is also called food trophic level web. 3) Secondary carnivores, occupying iii.Every food chain (or) food web starts with the autotrophic organisms and ends with ter the fourth trophic level

2)

4) Tertiary consumer occupying third trophic level

297. i)Primary consumers constitute II trophic level ii) carnivores depends on herbivores constitute I trophic level

iii) The top order carnivores are called climax carnivores

iv) Every predator food chain begins with the auto trophic organisms.

choose the correct statements

1) i and ii	2) i,ii and iii
3) i, iii and iv	4) ii and iv

298. Match the following list -I list-II

A)Nitrobacter	I) Clostridium
B) Azotobactor	II) Soil bacteria
C) Denitrifying bacteria	III) Water
D) Cyanobacteria	iv) Nitritebacteria
The correct combination is	

	Α	B	С	D
1)	Ι	II	III	IV
2)	IV	II	Ι	III
3)	II	Ι	III	IV
4)	III	Ι	II	IV

- 299. Read the following and choose the correct combinations I. Saprotrophs absorb substances through general body surface from the dead bodies II. Detritivores convert detritus into humic substances along with saprotrophs III. Mineralizers mineralize the humus IV. Formation of humus is a rapid reaction and mineralization is a slow process 1) I and II only 2) I, II and III only 3) II and IV only 4) All are correct In general, the iron and sulphur bacteria are 300. 1) detritivores 2) saprotrophs 3) chemoheterotrphs 4) chemoautotrophs 301. Secondary consumers occupy 1) second trophic level and herbivores 2) third trophic level and secondary carnivores
 - 3) third trophic level and primary carnivores4) second trophic level and primary carnivores
- 302. Assertion (A): If the phytoplankton present at the bottom of the pyramid of biomass, the pyramid appears to be inverted but the same when found in pyramid of energy, it is upright Reason (R) : Biomass of phytoplankton of less but energy is more with high turnover
- 303. Read the following about ecological succession and choose the correct combinations I. In hydrocere ecological succession, the submerged stage is the pioneer community II. In xerecere ecological succession, the herbaceous stage is the pioneer community III. Mesosere is the ecological succession in the habitat which is moderate in water IV. The community that cannot be replaced in xerocere is the forest stage 1) I, II, III only 2) I, III, IV only 3) I, II only 4) III, IV only 304. The following are the trophic levels of a food chain a. Hawk b. Rose bush d. Spiders e. Small birds c. Aphids Arrange these in a sequence 1) a, b, c, d and e (a + b) = (a + b) + (a +2) b, c, d, e and a 4) d, a, b, e and c 3) b, d, c, e and a 305. Which of the following is true to predator pyramid of numbers 1)There is a progressive increase in the number of organisms and decrease in the size of the body at each successive trophic level 2)There is a progressive decrease in the number of organisms and the size of the body at each successive trophic level 3)There is a progressive decrease in the number of organisms and an increase in the size of the body at each successive trophic level 4)There is a progressive increase in the number of organisms and the size of the body at each successive trophic level 306. The following are the statements regarding ecological pyramids i)Ecological pyramids represent the trophic structure only ii)In general, pyramid of biomass in a pond may be inverted iii)Typical units for a biomass pyramid could be grams per meter² choose the correct statements 1)i and ii 2)ii and iii 3)i and iii 4)i,ii and iii 307. Which of the following statement is correct 1) The flow of energy from one trophic level to another trophic level is multi-directional 2) The pattern of flow of energy in all ecosystems remains the same 3) The energy stored as reserve food in the plants always transferred to carnivores 4) Formation of chemical energy is the property of only plants

LAKE ECOSYSTEM

Study of freshwater ecosystem is called limnology	
Static freshwater ecosystem is called lentic system	
Eg: Ponds, Lakes & Tanks	
Flowing water ecosystem is called lotic ecosytem	
Eg: Rivers, Streams & Canals	•
Lakes which are poor in nutrients are called	
- Oligotrophic lakes	
Lakes which are rich in nutrients and oxygen are	
called - Entrophic lakes	•
Lakes which are rich in nutrients but poor in oxygen	
are called - Dystrophic	
Lakes can be distinguished from ponds mainly by	
their greater depths and presence of water throughout the year	
Light cannot penetrate beyond a depth of	
- 200 meters	•
Thermal stratification occurs in lakes of	
- Temperate regions	•
Number of zones present in deep lakes are three	
The shallow water zone close to the shore in which	
light penetrates upto the bottom is- Littoral zone	
Dissolved oxygen content is high in littoral zone due	
to the - Abundant vegetation	•
Biotic communities that are abundant in littoral zone	1
are -Producers & consumers	
Producers of littoral zone are -Rooted	•
plants & phytoplankton	
Plants that are partly submerged and partly exposed]]
are -Emergent/amphibious plants	
Nutrient pump is provided by emergent vegetation	
that are fixed to -The soil	•
Vegetation that form a link between water and land	
environment is Emergent vegetation	
Eg. of emergent vegetation-Typha (cat tails)	
Scirpus (bulrushes)	
Sagittaria (arrow head)	
Colocasia	• .
Plants that float freely on the surface of lake are	
-Free floating plants	• .
Eg. of free floating plants are Pistia, Wolffia,	
Azolla, Eichhornia, Lemna (duck weed)	1
Rooted plants with their leaves floating on surface	
due to long petioles are called rooted floating	• .
plants	i i
Eg. 01 rooted Hoating plants are -]
The vectorian where here i leave water my), Irapa	• .
I ne vegetation whose broad leaves provide space	i
Tor aquatic animals to rest and for laying eggs is -]]
The vegetation that is completely present is material	1
The vegetation that is completely present in water,	•
away from the shore are called -	1
SUMMEROPA VEOPTATIAN	

- Rooted submerged plants are Vallisneria, Chara(musk grass), Potamogeton, Hydrilla Free submerged plants are - Ceratophyllum (coon
- tails), Utricularia
- The plant that forms the inner border of littoral zone is Chara
- Important producers of littoral zone are

Phytoplankton

- Chlorophyll bearing floating micro-organisms present in water constitute Phytoplankton
 - Phytoplankton include:Diatoms Coscinodiscus, NitzschiaGreen algae -Volvox, SpirogyraCyanobacteria -Oscillatoria, NostocEuglenoids -Euglena, PhacusDinoflagellates -Gymnodinium,

Cystodinium

•

Maximum number of consumers are present in

- littoral zone
- Types of consumers Zooplankton

Nekton Neuston Periphyton

Benthos

Microscopic floating animals with limited locomotory powers present in the surface waters form

Zooplankton

Examples of zooplankton - Protozoans (Amoeba, Paramoecium etc) Rotifers (Philodina)

staceans Copepods(Cyclops)

The animals that are capable of swimming constitute -Nekton

Eg. of Nekton - fishes, Amphibians, terrapins, water snakes, insects like Ranatra (water scorpion), Notonecta (back swimmer) Dysticus (diving beetle) and their larvae.

Animals living at the air-water interface constitute -Neuston

Animals living on the surface of water are

Epineuston

Eg. *Gerris* (water strider) *Dineutes* (water bug), beetles etc

- Animals living on the underside of air-water interface constitute -Hyponeuston Eg. Larvae of mosquitoes (or Wrigglers)
- Animals attached to or clinging to the aquatic plants in this zone constitute -Periphyton Eg. Watersnails, nymphs of insects, Bryozoans, turbellarians, hydras etc.
- Organisms that reston or move on the bottom or beneath the sand or debris are **-Benthos** Eg. Chironomid larvae (blood worms), Clams, Red annelids, Isopods, Amphipods, Cray fishes etc

IIIV-TINU

•	The Open water zone in	n a lake that extends upto	312.	Typha is example for	
	the effective light penetr	ation level is called		1) Phytoplanktons	2) Emergent vegetation
		- Limnetic zone		3) Floating vegetation	4) Submerged vegetation
•	The level or depth in a	lake at which the rate of	313.	Nymphea, Pistia are e	examples to
	photosynthesis equals the	rate of respiration is known		1) Periphytons	2) Floating vegetation
	as effective light pene	tration or compensation		3) Emerged vegetation	4) Nektons
	level	· 1 1 1 1 · 10/ C	314.	Water striders and wat	ter bugs constitute
•	Light intensity at competent	isation level is about 1% of		1) Hyponeustan	2) Epineuston
•	Chief producers of limp	lake		3) Zooplankton	4) Neuston
•	Chief producers of himin	Phytonlankton	315.	Fishes, amphibians, Te	errapins and water snakes
•	Consumers of limneti	c zone are zoonlankton		are examples to	
•	nekton & neuston			1) Zooplanktons	2) Neuston
•	The Zone that is absent i	in shallow ponds is		3) Periphytons	4) Nekton
		Limnetic zone	316.	The free swimming anir	nals constitute
•	The Zone that is often a	bsent in ponds is		1) Neuston	2) Periphyton
		Profundal Zone		3) Nekton	4) Zooplankton
•	The bottom and deep wa	ater area of a lake, beyond	317.	Gerris and Dineutes	
	the depth of effective lig	tht penetration is		1) Periphyton	2) Phytoplankton
		- Profundal zone		3) Zooplankton	4) Neuston
•	In profundal zone, pho	tosynthetic organisms are	318.	Decomposers and emer	rgent vegetation absent in
	absent due to the	Absence of light		1) Limnetic zone	2) Profoundal zone
•	In profundal zone oxyge	en content is low due to the		3) Littoral zone	4) Lotic zone
	absence of	photosynthetic activity	319.	The stationary fresh wat	er ecosystem such as pond,
•	Animals that can live at	low oxygen levels only are		lake constitute	
	found in	profundal zone		1) Lotic ecosystem	2) Lentic ecosystem
•	Main biotic community f	found in profundal zone is		3) Abyssal ecosystem	4) Limnetic ecosystem
	0 1	decomposer organisms	320.	The science dealing wi	th the fresh water ecosys-
•	Consumers living in pro:	tundal zone are nekton and		tem is called	
	Fa Chironomid larva	Dentinos Rad annalids Clams		1) Lichenology	2) Limnology
•	Organisms present in larg	e number in profundal zone		3) Saurology	4) Malacology
•	are	hacteria	321.	Spirogyra, Volvox are e	examples to
•	Recycling of nutrients o	ccurs in profundal zone		1) Zooplankton	2) Nekton
•	The planktonic organism	s that lives in limnetic zone		3) Neuston	4) Phytoplankton
	during night and moves	to the bottom of the lake as	322.	The main Zooplankton	of Limnetic zone
	benethic form during day	y time is		1) Spirogyra, Volvox, D	inoflagelletes
	Che	aoborus (Phantom larva)		2) Euglenoids, Dinoiflag	gelletes
	LEVEI	L - I		3) Copepods, Cladocer	ra, Rotifers
308.	Animals living on top of	The air-water interface are		4) Fishes, Frogs,	
	called		323.	In a pond ecosystem j	plankton like Copepods,
	1) Periphyton	2) Hyponeuston		Ranatra constitute.	
	3) Epineuston	4) Nekton		1) Producers	2) Primary consumers
309.	The animals which are	found attached to aquatic		3) Secondary consume	rs 4) Tertiary consumers
	plants are called		324.	Water snails, Broyzoar	ns, Hydras, Rotifers, Flat-
	1) Nektons	2) Periphyton		worms, Nymphs of larg	ge number of insect form
	3) Zooplanktons	4) Neustons		1) Neuston	2) Nekton
310.	The open water zone e	xtending up to a depth of		3) Periphyton	4) Zooplankton
	effective penetration of	light in pond is called	325.	Examples to limit net	kton
	1) Lotic zone	2) Limnetic zone		1) Copepods, Cladocer	rans, Kotifers
	3) Littoral zone	4) Profundal zone		2) Fishes, Frogs, Pond	Snakes
311.	Shallow water zone alo	ng the shore of a pond		3) Spirogyra, Oedogon	ium, Volvox
	1) limnetic	2) Profundal		4) Euglenoides, Dinofla	genates
	3) Littoral	4) Lotic			

326.	Rivers, Canals and stre	ams constitutes		c) Neust	on		iii) Bo	eetles	
	1) Lotic waters	2) Lentic waters		d) Perip	hyton		iv) Ra	anatra	
	3) Littoral waters	4) Benthic waters		e) Benth	IOS		v) Co	opepods	
327.	Basic functional unit of	f Biosphere is			a	b 	C ·	d	e
	1) Ecosystem	2) Producer		1.	1	Ш	IV 	V -	1
	3) Consumer	4) Phytoplankton		2.	V ·	ÍV 	111	1	1
328.	The first tropic level o	f pond ecosystem mainly		3.	1	Ш	IV 	1	V
	formed of		227	4.	V	ÍV ··· ci	11 	1	1
	1) Green plants	2) Zooplankton	337.	Biotic c	ommun	ities of l	imnetic	zone of	a lake are
	3) Periphyton	4) Phytoplankton		1.Produ	icers an	d decon	posers	5	
329.	Basic functional unit of	Biosphere		2.Produ	icers and	d consu	mers		
	1)Community	2) Population		3.Cons	umers a	nd deco	mpose	rs	
	3) Ecosystem	4) EON	220	4.Produ	icers co	nsumers	s and de	ecompos	sers
330.	Decomposers are also	called	338.	I he foll	lowing s	tatemen	ts are re	elated to p	profoundal
	1) Consumers	2) Reducers		zone.	C	1 1	.1 1		
	3) Producers	4) Detrivores		1.In the	protoun	dal zone	e the ph	otosynth	etic plants
331.	Oxygen deficiency is se	en in		occur o	nly parti	ally.	•		1 60
	1) Profoundal zone	2) Littoral zone		11 Anim	als that	can surv	vive at	low leve	$1 \text{ of } O_2 \text{ are}$
	3) Limnetic zone	4) Lotic zone		present		a 1			
332.	Chironomid Larva, and	nelids and the animals be-		111. thick	k layer c	of mud a	nd sand	d lies at t	he bottom
	longing to the family s	phaeridae forms the main		of this z	cone.				
	consumers of	1		The cor	rect con	nbinatio	n 1s:		
	1)Littoral zone	2)Sublittoral zone		1) 1 and	11 are co	orrect	2)11	and 111 ar	e correct
	3)Limnetic zone	4)Profoundal zone		3) 1 and	111 are c	orrect	4)1, 1	11, 111 are 1	incorrect
333.	Which of the followin	g is not correct regarding	339.	The fol	lowing a	re the st	atemer	its about	profundal
	profoundal zone	6 6 6		zone					
	1)Bacterial population	is high		I. Decc	mposer	s are pre	esent in	large nu	imbers
	2)Decomposition of de	ad bodies is high		II. Profi	undal zo	ne is ap	hotic zo	one.	
	3)Producers are high	8		III. Org	anisms	which do	o not re	quire mu	ich
	4)Useful nutrients are r	released into water		oxygen	can surv	/ive in p	rotunda	al zone.	
334.	Emergent vegetation	is found in		The cor	rect con	ibinatio	n 18		
	1) away from the sho	re		1. I and	d II are	correct			
	2) close to the shore			2.11 and	a III are	e correc	t		
	3) in the profundal zo	ne		3.1an	a III are	correct			
	4) in the limnetic zone	e		4. 1, 11,	III are	correct			
					-			-	
	LEVE	L-II		*	Popu	latio	n Eco	ology	
335.	The following statement	s are related to Littoral zone.							
	i.The littoral zone is the	e open water zone extend-	•	The sci	ence that	t deals	with d	ynamics	of species
	ing up to the depth of ef	fective light penetration.		populat	ions and	their int	eractio	n with en	vironment
	ii.It has no contact eithe	er with the shore or with the		is called	d popula	ation ec	ology (or auteco	ology
	bottom of the lake.		•	Autecol	logy is a	subtiel	d of ec	ology	
	iii.Vegetation is abund	lant and therefore O ₂ con-	•	The per	son who	publishe	ed "Ess	ay on the	principles
	tent is high.			of popu	lations"	15 Thom	as Mal	thus	· 1
	The correct combination	on is :	•	The con	cept of a	n expand	ling pop	ulation m	iust exceed
	1) only i is correct 2) of	only ii is correct		forward	or nee led by	ueu nat	ural r	esources	Malthus
	3) only iii is correct 4).	All are correct		Increase	ng com	etition f	for food	l shelter	etc. due to
336.	Match the following an	nd choose the correct com-		expone	ntial o	rowth a	of non	ulation	is called
	bination			Malthu	sian gr	owth m	odel/ S	imple ex	ponential
	<u>List-I</u>	<u>List – II</u>		growth	model			1, 2, 2,	•
	a) Zooplankton	1) Cray fish	•	Logistic	growth	functior	n was fi	rstr publi	shed by
	0) INEKION	11) Bryozoans		č	-				2

Pierre Francois Verhulst | •

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- A group of organisms belonging to the same species living in an area is called **population**
- Study of changes in the size of populations is called **population dynamics**

Population Characteristics:

- Number of young individuals produced in a unit time is **natality**
- Natality rate in the entire population is

absolute natality rate

- Natality rate per individual in a populatin is called **specific natality rate**
- Maximum natality rate in a population under unlimited environmental conditions is

potential natality rate

- Natality rate under given limited ecological conditions is ecological natality rate
- Natality rate in humans is number of births per year per thousand in a **population**
- Death of the individual in the population is called **mortality**
- Minimum number of deaths under unlimited conditions is **potential mortality rate**
- Death of individuals under given ecological conditions is ecological mortality rate
- Mortality in human beings is **number of deaths per year, per thousand individuals**
- Relative rates of natality & mortality regulate the size of a population
- Movement of individuals in and out of the population is **population dispersal**
- Outward movement of individuals from population to the other area is called **emigration**
- Inward movement of individuals into the population is called **immigration**
- Emigration and immigration regulate the size of population
- Number of individuals per unit area or volume is **population density**
- The factors that influence the density of population are **natality**, **mortality**, **emigration**, **immigration** & **environmental factors**
- The environmental factors that influence the density of a population are seasons, climatic conditions, availability of food etc.
- To calculate the density of a population

 $D = \frac{Number of individuals(N)}{Area(a)}$

Population Growth

• The biological feature exhibited by the populations of all species known as **growth**

- The sum total of both biotic & abiotic factors which act together to limit the size of a population is called **environmental resistance**
- Growth of the population is determined by the reproductive potential of organisms and by

environmental resistance

The maximum reproductive potential under unlimited environmental resources is referred to as

biotic potential

To calculate the growth of a population (r)=specific natality rate (b) - specific mortality rate(d) (r = b - d)

Growth Curves

The growth and decline in the size of a population over a unit period of time, under given environmental conditions can be represented graphically as

growth curves

- common growth pattern exhibited by many population of organisms is **sigmoid pattern**
 - Initial slow growth of a population in a new environment is called **lag phase or positive** acceleration phase
 - The rapid growth phase of population during which births greatly exceed deaths is called **logarithmic phase**
 - The decrease in population due to declining birthrate on rising death rate is called

negative acceleration phase

- Population is stabilised as natality rate equals the mortality rate at zero population growth phase
 - Increase in environmental resistance occurs at zero population growth phase
 - Maximum stable population that a particular environment can support over a long period of time is called called carrying capacity
 - Sigmoid pattern of population growrth depends on the numbers present in the population, hence called density dependent
 - Populations like algal blooms exhibit

exponential growth pattern

- Exponential growth of population is represented graphically by **J-shaped growth curve**
- Sudden decrease in the population from peak level is called crash
- As exponential growth of population is not dependent on population density, it is called

density independent

- Crash of population occurs mainly by seasonal changes or the end of the breeding phase of the organisms
 - Population growth pattern of aphid population is an example of **exponential growth of population**

•	The limiting factor that is responsible for the crash of aphid populations is bot & dry weather	342.	Population growth of r	nicroorganisms epresented by
			1) Sigmoid graph	2) y-shaped curves
	Age Distribution:		3) 's'-shaped curve	4) J-shaped curve
•	Number of ago groups in a population is 2	343.	Density dependent gro	owth curve is
•	Number of age groups in a population is 5		1) S shaped	2) J shaped
•	Diagrammatic representations of the size of a		3) V shaped	4) T shaped
	are called age nyramids	344.	Population growth cur	ve of algal blooms is
•	Status of a population can be understood by the		1) S-shaped	2) I-shaped
-	shane of nyramid		3) Z-shaped	4) J-shaped
•	Shape of the pyramid of a growing population is	345.	Age pyramid of a decli	ning population is
	triangular		1)Triangular	2) Bell shaped
•	Shape of the age pyramid of a stable population is		2) Rectangular	4) Urn shaped
	bell shaped	346.	Arrange the following	stages of a sigmoid
•	Shape of the age pyramid of a declining population		curve in a sequence fro	m population
	is urn shape		establishment	
•	Pre reproductive or immature animals occur in large		A. Positive Acceleration	DI
	numbers in case of growing population		C Negative acceleration	on nhase
•	All the three age groups occur in equal number in		D. Carrying Capacity	on phase
	case of stable population		1) A B C D	2) C B D A
•	Old or postreproductive individuals predominate in		3) C B A D	4) DABC
	declining population	347.	Pre-reproductive age	group predominates in a
	Densels from Densels from		1) stable population	2) growing population
	Population Regulation		3) declining population	1
•	Factors that regulate the growth of population are		4) population under eq	uilibrium
•	density independent factors	348.	Growth curve that dev	elops in the growth
•	Factors that affect the natality or mortality rate of a		of aphid population is	
	population independent of population density are		1) 'S' shaped and dens	sity independent
	extrinsic factors		2) 'S' shaped density	dependent
•	Factors that affect the birth rate or death rate of a		3) 'J' shaped and dens	ity independent
	population in ways varying with population density		4) 'J' shaped and dens	ity dependent
	are intrinsic factors	349.	Intrinsic factors which	regulate the size of
•	Variations in climatic conditions are considered as		a population are	
	density independent factors		1) migration and space	e 2) space and shelter
•	Increase in competition, migration of individuals,		3) shelter and weather	
	territorial behaviour, spread of diseases in the		4) competition and pre	edation
	population are considered as			
	density dependent factors		LEVEI	LII
	DODULATION ECOLOCY	350.	The following are the st	atements about
	POPULATION ECOLOGY		population density	
	LEVEL-I		I. Population density ca	in be calculated by the
340.	The maximum reproductive potential under		formula $D = \frac{n}{n}$	
	unlimited environmental resources is referred to as		a^{D-1}	
	1) Biokinetic zone 2) Biotic potential		II. Density of population	increases if natality is
	3) Biome 4) Biomass		more than mortality and	emigration is more than
341.	In which age pyramid immature		immigration.	-
	animals occur in large number		III. Density of a populat	ion in a given area does
	1) growing population		not remain constant	-
	2) stable population		Correct combination is	
	3) Declining population		1. I and II are correct	2. II and III are correct
	4) post reproductive population		3. I and III are correct	4. all are correct.

- 351. Assertion (A) :- Environmental resistance controls population growth Reason (R):- Growth is the fundamental feature shown by the populations of all species
- 352. Assertion (A) :- Bell shaped pyramid indicates stable populationReason (R):- In a stable population, individuals of all age groups are present in equal numbers
- 353. Assertion (A) :- Population growth is regulated by extrinsic factor like food ,space and shelter etc. Reason (R):- Extrinsic factors are density dependent factors

354. Match the following and choose the correct combination

<u>Type of</u> factors	<u>biotic</u>	Exar	<u>nples</u>	
a) Prima	ry	i) Ba	cteria and	fungi
consum	ers			
b) Seco	ndary	ii) Fo	oxes and v	volves
consum c) Tertia	ers ers	iii) v	ultures an	d hawks
d) Prod	icers	iv) P	hytonlank	ton
e) Deco	mposers	v) De	er and Ra	abbits.
a	b	c	d	e
1 . v	i	ü	iv	i
2. i	ü	ï	iv	v
3. ii	i	ü	iv	v
4. v	iii	ï	iv	i

MAN AND BIOSPHERE LEVEL III

355				1	Study the fo	llowing:	
BIC	DTIC C	OMM	UNITIE	2S	CHARA	CTER	EXAMPLES OF LITERAL ZONE
A. F	hotopla	nkton			Floating (Chlorophyll	Spirogyra & Cladocerans
B. E	Emergen	t Vegeta	ation		These are	fixed to the soil	Typha and Sagittaria
					obtain the the soil	ir nutrients from	
C. I	Floating	vegetat	ion		It contains	s rooted and	Pistia, Nymphaea
	0	0			floatingpl	ants with	
					broad leav	/S	
D. S	Submerg	ged Veg	getation		The leave	ls of these plants	Limnophila, Chara
					are broad		
Cor	rect com	binatio	n is:				
1. A	A and B		2. B	and (2	3. B and D	4. A and D
356.	Match	the foll	owing ar	nd cho	ose the corr	rect	
	combir	nation				_	
	<u>List-I</u>				<u>List-I</u>	<u>[</u>	
	a) Zoop	olankto	n		i)Plana	rians	
	b) Epin	euston			ii) Dap	hnia	
	c) Hype	oneusto	on		iii)Ter	rapin	
	d) Nek	ton			iv) Lar	vae of mosquitoes	
					v) Ger	ris	
		a	b	c	d		
	1.	1	v	ÍV 	Ш		
	2.	1	1	111	īV		
	3.	1	Ш	ÍV 	v		
	4.	. V	1V	111	1		
357.	The fol	lowing	statemer	nts are	related to r	hatality and morali	y
	I.Eco	logical	natalityi	ate 1s	always less	than the potential i	natality rate.
	II.Pot	ential n	norality i	ate alv	ways less th	an ecological mor	ality rate
	III. Po	otential	morality	rate a	Iways highe	er than the ecologic	ally morality rate
	1) I a:	nd II		2)	l and III	3) II and	4) I, II and III

358. The following are the sta	tements about effects of light on lo	comotion of organisms.
I. Euglena and Planarian	ns are said to the positevely photota	actic.
II. Earthworms and cock	croaches are said to be negatively	phototactic.
III. Larvae of Pinnothere	s maculatus moves faster towards	the source of light, by
increasing the light inte	nsity.	
1. I and II are correct	2. only I	II is correct
3. only L is correct	4. only I	Lis correct
359 Which of the following	ng is correct?	
A Increase in temperati	re beyond biokinetic zone decreas	es metabolic rate of animals
R Metabolic rate of poil	zilotherms gets influenced by the o	hanges in surrounding temperature
C. Metabolic rate of point	chotherms gets influenced by the ch	hanges in surrounding temperature.
	1 C 2 1 C 4 A D	lective of surrounding temperature changes.
I. A and B 2. B a	nd C 3. only C 4. A, B a	
360. The amount of energy in	calories required to raise the temp	berature of I gm of water by I ^o C is called
1) Latent heat	2) Heat budget 3) Specific hea	at 4) Latent heat of vapourisation
361. Study the following		
ATMOSPHERE LAYERS	CHARACTER-I	CHARACTER-II
A. Troposphere	Extends 8 to 10 km from pies	and Lower most layer of the
D Stratagnhara	Ozona rich gag	Tomporatura docrossos
B. Stratosphere	With attitude ful effects of UV	rova
C Jonosphere	Oxygen and nitric oxide	Reflects the short radio-
e. Ionosphere	occur in jonic state	waves
		Making telecommunications over
		long distances possible
D. Exosphere Atn	nospheric pressure is extremely h	igh Outer space
Correct combination is:		
1. A and B	2. B and C 3. C and	ID 4. A and C
362. The following are the statm	nents about age distribution in a pop	pulation
I. Rate of reproduction is	s more in young individuals.	
II. Death rate is high in y	oung and old individulas.	
III. Birth rate is high in n	niddle age individuals.	
The correct combination	is	
1. I and II are correct	2. II and III are o	correct
3. I and III are correct	4. all are correct	
363. Study the following and	choose the correct combination (s)	
Animal	Character-I	Character-II
I. <u>Thorny devil</u>	Hygroscopic system in skin	Gulps water from dew on skin
II. <u>Kangaroo rat</u>	Feeds on nuts	Depends on metabolic water
III. <u>wood rat</u>	Lives in forests	Depends on water in bark of trees
IV. <u>Camer</u>	Body can act as meat sink	Sweats only at 54° C or more
1 II III and IV only	2 Honly 2 L III a	nd IV only A Land II only
364 Study the following	2. II Only 5. I , III a	
FRESH WATER	CHARACTER -I	CHARACTER-II
POND ZONE	CHARGE LEX-I	CHARACTER-II
A. Littroal zone	Limnophila Nymphaea	Copepods, Terrapins
	Valisnaria are producers	Hydra are consumers
B. Profondal zone	Pistia. Valisnaria are producers	Bacteria chironomid
		larvae are consumers
C. Limnetic zone	Typha & sagittaria are producer	s Copepods cladocerans
are consumers		1 1
D. Thermocline	Rapid decrease of temperature	Also called metalimnion
	- *	
Correct combination is		
1. A and C	2. A and B 3. C and D	4. A and D

365. The following statements are related to Littoral zone. i. The littoral zone is the open water zone extending up to the depth of effective light penetration. ii. It has no contact either with the shore or with the bottom of the lake. iii. Vegetation is abundant and there fore O₂ content is high. The correct combination is: 1) only i is correct 2) only ii is correct 3) only iii is correct 4) All are correct 366. The following are the statements pertaining to 'thermal stratifications' I. Summer stratification occurs in temperate lakes and is preceded by *spring overturn* II. Zone of *rapid decline of temperature* in a summer stratified lake is called metalimnion III. 'Spring overturn' is followed by 'winter stagnation' IV. If gradual *rise* in temperature *leads* to *overturn* in a temperate lake, it must be *winter stratification* in that lake at *that particular time*, and it will lead to 'Spring over turn' in due course of time The correct combination of statements is: 1. II and III only 2. I and II only 3. I, III and IV only 4. I, II and IV only 369. Assertion (A): Mammals living in colder 367. Assertion (A): Winter stratification regions tend to be larger than their does not have significant effect on the counterparts in the warmer regions lives of aquatic organisms living below **Reason (R) :** Ratio of the body the icy layer(stratum)with reference to surface to the body size of a mammal availability of oxygen living in colder regions is less than **Reason** (**R**): Even in stratified / that of its counterparts living in stagnated conditions oxygen requirement warmer climates so that heat loss is is comparatively low as the metabolic rate less, as explained by Bergmann's rule is at a slower pace. 1. Both 'A' and 'R' are true and 'R' is

1. Both 'A' and 'R' are true and 'R' is

not the correct explanation to 'A'.2. Both 'A' and 'R' are false.

3. 'A' is incorrect . 'R' is correct

4. Both 'A' and 'R' are true and 'R' is the correct explanation to 'A'.

368. Match the following with reference to *cyclomorphosis* in *Daphnia*

List - I	[List - l	Ι		
A. Win	nter	i. hood	like str	ucture a	ttains
		its max	imum si	ze	
В. <i>Spr</i>	ing	ii. hooc	l like st	ructure	decreases
		in size			
С. <i>Sun</i>	ımer	iii. hea	d becon	nes rour	nd and
		'hood'	is abse	nt	
D. Aut	umn	iv. hoo	d like st	ructure	begins
		to grov	V		
	Α	В	С	D	
1.	ü	iv	i	i	
2.	ü	iv	i	ii	
3.	iv	iii	i	ii	
4.	iv	iii	ii	i	

2. Both 'A' and 'R' are false.

3. 'A' is incorrect. 'R' is correct
4. Both 'A' and 'R' are true and 'R' is the correct explanation to 'A'.

not the **correct** explanation to 'A'.

370. The following statements are about osmoregulation in fresh water organisms. i. The fresh water fishes show in their kidney fewer nephrons without glomeruli ii. Protozoans such as Amoeba have contractile vacuoles to remove the excess water entering the body by endosmosis iii. The African lung fish undergoes aestivation to overcome the unfavourable conditions. The correct combination is : 1) i and ii are correct 2) i and iii are correct 3) ii and iii are correct 4) i only correct 371. Match the following and choose the correct combination List – I <u>List – II</u> a)Chaetopterus i) Summer sleep b) Protopterus ii) Hygroscopic skin c) Moloch horridus iii) plankton d) Daphnia iv) Bioluminescent

v) Hypoxia

		a	b	c	d
	1.	iv	i	i	iii
	2.	V	i	i	iii
	3.	iv	i	i	ü
	4.	v	i	i	ü
372.	Match t	he follo	wing:		
	List - I			List	-11
A. B r	ackish w	vater of	rganisn	ns i.Mai	inebony fishes
В. <i>А</i>	glomeru	lar kia	lney	ii.Fre	sh water
				te	eost fishes
С. С	ells for u	ıptake	of salts	iii. l	Elasmobranchs
D. P	hysiolog	ical u	raemia	iv. <i>L</i>	Dipodomys
				v. Ei	ıryhaline
	ABC	D			ABCD
1. v	i iii ii	ĺ		2. v	vivii i
3. v	iii ii i	l		4. v	i ii iii
373	Follow	wing sta	atement	is about	marine
373	Follov habbi	wing sta tat orga	atement nisms	is about	marine
373	Follov habbi i) Mri	wing sta tat orga ne bony	atement nisms y fishes	is about have we	marine ll glomerular
373	Follov habbi i) Mri kidney	wing sta tat orga ne bony y	atement nisms y fishes	is about have we	marine ll glomerular
373	Follov habbi i) Mri kidney ii) Tho	wing sta tat orga ne bony y e giant t	atement nisms y fishes urtle an	is about have we d seagul	marine ll glomerular ls have similar
373	Follov habbi i) Mri kidney ii) The salt ex	wing sta tat orga ne bony y e giant t ccreting	atement nisms y fishes urtle an glands	is about have we d seagul	marine ll glomerular ls have similar
373	Follov habbir i) Mri kidney ii) The salt ex iii) Th	wing sta tat orga ne bony g e giant t ccreting ney drin	atement nisms y fishes urtle an glands ik water	is about have we d seagul to comp	marine Il glomerular Is have similar pensate the
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o	wing sta tat orga ne bony g e giant t ccreting ney drin f water	atement nisms y fishes urtle an glands k water	is about have we d seagul • to comj	marine ll glomerular ls have similar pensate the
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o iv) Ma	wing sta tat orga ne bony e giant t ccreting ney drin f water arine bo	atement nisms y fishes urtle an glands k water	is about have we d seagul to comp es have s	marine Il glomerular Is have similar pensate the pecialised
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o iv) Ma chlori	wing sta tat orga ne bony e giant t ccreting ney drin f water arine bo de secro	atement nisms y fishes urtle an g lands k water ory fishe eting ce	is about have we d seagul to comp es have s lls in the	marine Il glomerular Is have similar pensate the pecialised ir gills.
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o iv) Ma chlori The co	wing sta tat orga ne bony e giant t ccreting ney drin f water arine bo de secre orrect c	atement nisms y fishes urtle an glands k water ory fishe eting ce	is about have we d seagul to comp es have s lls in the tion is	marine Il glomerular Is have similar pensate the pecialised ir gills.
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o iv) Ma chlori The cu 1) i an	wing sta tat orga ne bony e giant t ccreting ney drin f water arine bo de secro orrect c orrect c id ii onl	atement nisms y fishes urtle an glands k water bry fishe eting ce y	is about have we d seagul to comp es have s lls in the tion is 2) ii	marine Il glomerular Is have similar pensate the pecialised ir gills. and iii only
373	Follow habbin i) Mri kidney ii) The salt ex iii) The loss o iv) Ma chlori The cu 1) i an 3) i, ii	wing sta tat orga ne bony e giant t ccreting ney drin f water arine bo de secro orrect c orrect c di ii onl and iii o	atement nisms y fishes urtle an glands k water ory fishe eting ce combina y only	is about have we d seagul to comp es have s lls in the tion is 2) ii 4) ii,	marine Il glomerular Is have similar pensate the pecialised ir gills. and iii only iii and iv only