Ecosystem

1. Assertion (A): Ecosystem can be visualized as a functional unit of nature.

Reason (R): In ecosystem not only living organisms interact among themselves but also with surrounding physical environment.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **2. Assertion (A):** Net primary productivity is the base of life of heterotrophs.

Reason (R): Net primary productivity is the available biomass for consumption to heterotrophs.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- 3. Assertion (A): Of this, despite occupying about 70 percent of the surface, productivity of oceans are only 55 billion tons.

Reason (R): In oceans there is poor nutrient availability in producer region.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **4. Assertion (A):** Fragmentation is one of the important step of decomposition.

Reason (R): Fragmentation helps in leaching of water soluble organic substances & minerals.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

5. Assertion (A): Decomposition is largely an oxygen requiring process.

Reason (R): Oxygen leads to aerobic breakdown of organic substances hence there is complete breakdown of detritus.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **6. Assertion (A):** In Terrestrial ecosystem much larger fraction of energy flows through the detritus food chain.

Reason (R): In an aquatic ecosystem, GFC is the major conduit for energy flow.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- 7. Assertion (A): Detritus food chain may be connected with grazing food chain at some levels.

Reason (R): Some of the organisms of DFC are prey to the GFC animals and some of the organisms are of Omnivores in nature.

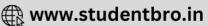
- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **8. Assertion (A):** Pyramid of energy is most reliable representation of functional relationship of any ecosystem.

Reason (R): Energy flow is always unidirectional without any kind of deviation.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false







9. Assertion (A): A given species may occupy more than one trophic level, in the same ecosystem at the same time.

Reason (R): Trophic level represents a functional level, not a species as such.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **10. Assertion (A):** Saprophytes are not given any place in ecological pyramids although they play vital role in ecosystem.

Reason (R): Saprophytes have no specific trophic level.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **11. Assertion (A):** Living systems have a high degree of tendency for undergoing entropy.

Reason (R): Living systems overcome entropy by continuous input of usable or free energy.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

12. Assertion (A): In place of isolated food chain, food webs are operational in an ecosystem.

Reason (R): Absence of any species in an area does not effects the energy flow.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **13. Assertion (A):** In an aquatic ecosystem, pyramid of biomass is inverted.

Reason (R): Biomass depends upon the reproductive potential and number of phytoplanktons.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **14. Assertion (A):** Every biological system resist a change and wants to remain in state of equilibrium.

Reason (R): Climax communities of an ecosystem are produced after several changes it has gone through succession.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false



Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.
- **15. Assertion:** Restriction enzymes recognize palindromic sequence.

Reason: Palindromic sequences read same in both directions of the two strands.

16. Assertion: Restriction enzymes Hind II and Hpa are produced from two different genera of bacteria.

Reason: Hind II is produced from Haemophilus while Hpa is produce from Hematococcus.

17. Assertion: Restriction endonucleases are also called 'molecular scissors'.

Reason: When fragments generated by restriction endonucleases are mixed, they join together due to their sticky ends.

18. Assertion: Restriction enzymes cut the strand of DNA to produce sticky ends.

Reason: Stickiness of the ends facilitates the action of the enzyme DNA polymerase.

19. Assertion: Plasmids are extrachromosomal DNA.

Reason : Plasmids are found in bacteria and are useful in genetic engineering.

- 20. Assertion: Insertion of recombinant DNA within the coding sequence of b-galactosidase results in colourless colonies. Reason: Presence of insert results in inactivation of enzyme b-galactosidase known as insertional inactivation.
- 21. Assertion: Agrobacterium tumefaciens is a

pathogen of several monocot plants.

Reason: Retroviruses in plants have ability to transform normal cells into cancerous cell.

22. Assertion: Agrobacterium tumefaciens is popular in genetic engineering because this bacterium is associated with roots of all cereals and pulse crops.

Reason: A gene incorporated in the bacterial chromosomal genome gets automatically transferred to the crop with which the bacterium is associated.

23. Assertion: Clones are produced by sexual reproduction.

Reason: These are prepared by group of cells descended from many cells or by inbreeding of a heterozygous line.

24. Assertion: "DNA finger printing" has become a powerful tool to establish paternity and identity of criminals in rape and assault cases.

Reason: Trace evidences such as hairs, saliva and dried semen are adequate for DNA analysis.

25. Assertion : One application of genetic engineering is the production of human insulin by microbes.

Reason: Gene for production of human insuling can be transferred to Escherichia coli by recombinant DNA technique.

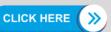
26. Assertion: Genetic engineering can overcome the drawbacks of traditional hybridization.

Reason: Genetic engineering can create desired DNA sequences to meet specific requirements.

27. Assertion: All expression vectors are cloning vectors and vice versa.

Reason: Expression vectors have at least the regulatory sequences i.e., promoters, operators, ribosomal binding sites, etc. having optimum function in the chosen control but not origin of replication.





	ANSWER KEY													
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	1	1	1	1	1	2	1	2	1	1	2	1	3	2

15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.		
R	D	R	С	R	Δ	D	D	D	Δ	Δ	\overline{C}	d		

