

### Topic :- Ecosystem

- 1 **(b)**  
Food web (*i.e.*, network of food chains interconnected at various trophic levels) is meant for increasing the stability of an ecosystem by providing alternate sources of food.
- 2 **(b)**  
When a person consumes curd/yoghurt, it would be considered in the top or apex (*i.e.*, 2<sup>nd</sup> trophic level) of detritus food chain. Yoghurt or curd is a commercial fermented dairy product. It is produced by a starter culture of *Streptococcus thermophiles* and *Lactobacillus* in 1 : 1 ratio at 40 – 60°C and then partial fermentation by yeast. *Streptococcus* produced acid and *Lactobacillus* forms aroma.
- 3 **(a)**  
A-Biotic, B-Abiotic, C-Decomposers, D-Photoautotrophs, E-Chemoautotrophs
- 4 **(a)**  
In a grassland ecosystem, the number of producers is more than the number of top carnivores, whereas in case of a tree, the number of producers is less as compared to consumers
- 5 **(d)**  
Phosphorus is needed for the production of DNA and RNA, cellular membranes, bones and teeth
- 6 **(d)**  
(i) The term 'ecosystem' was coined by Sir AG Tansley (1935) to describe the whole complex of living organisms living together as a sociological units and their habitats  
(ii) The entire biosphere is referred to as global ecosystem, which consists of several local

ecosystems of earth. The size of the ecosystem varies from small pond to a large forest or sea  
(iii) Vertical distribution of different species occupying different levels is called stratification, *e.g.*, in a forest ecosystem, trees occupy top vertical layer, shrubs the second and herbs and grasses occupy the bottom layers

7 (a)

Producers → Herbivores → Carnivores  
(Grass) (Cow) (Human)

8 (d)

Biological membrane, nucleic acids and cellular energy transfer systems.

Phytoplanktons → Submerged plant stage A → Submerged free floating plant stage B → Reed swamp stage C → Marsh-meadow stage → Scrub stage D → Forest plant stage

9 (a)

**Net Primary Productivity (NPP)** is the weight of organic matter stored by producers in a unit area/volume per unit time. NPP is equal to the rate of organic matter created by photosynthesis minus the rate of respirations and other losses. Stored biomass is transferred from one trophic level to another trophic level.

11 (d)

In a grazing food chain carnivores like frog, etc are referred to as secondary consumers, which feed on herbivores (primary consumers). Secondary consumers constitute third trophic level of the food chain.

12 (a)

**Biomass** is the living or organic matter of living organisms, in terms of weight, present at any given time in the environment. In a food chain, it can be depicted by pyramid of biomass, which is upright in terrestrial ecosystem and inverted in aquatic ecosystem.

13 (b)

Insectivorous plants are autotrophs as they have chlorophyll. They don't eat insects for food, but use them as a source of N and P and use light to

- transform them into biomolecules
- 14 **(b)**  
Low temperature and anaerobiosis inhibit decomposition. Decomposition is mainly an aerobic process  
In aquatic ecosystem GFC is the major conduit for energy flow. As against this in a terrestrial ecosystem much larger fraction of energy flows through the DFC. Dry weight is more accurate
- 15 **(b)**  
The rate at which organic compounds are formed in a green plants or in a population of green plants per unit time and area is known as the gross primary productivity. It is usually measured as an increase in the stored energy or an increase in the biomass. GPP is utilised by plants in respiration
- 16 **(b)**  
The various stages in a hydrosere are well studied in ponds, pools or lakes. The various stages of hydrosere are :
- (i) **Phytoplankton stage**, e.g., Some blue-green algae, green algae (*Volvox*), diatoms and bacteria, etc.
  - (ii) **Rooted submerged stage**, e.g., *Hydrilla*, *Vallisneria*, etc.
  - (iii) **Floating stage**, e.g., *Nelumbo*, *Nymphaea*, etc.  
Some free floating species are *Pistia*, *Azolla*, *Lemna*, etc.
  - (iv) **Red-swamp stage**, e.g., *Species of Scirpus*, *Typha*, etc.
  - (v) **Sedge-meadow stage**, e.g., Species of Cyperaceae and Gramineae.
  - (vi) **Woodland stage**, e.g., *Lantana*, *Salix*, *Populus*, etc.
  - (vii) **Forest stage**, e.g., Tropical rain forests, mixed forests of *Alnus*, *Acer*, *Quercus* (oak), tropical deciduous forests.
- 17 **(b)**

Food web  
Producers

19 **(d)**

Ecological efficiency or trophic level efficiency refers to the percentage of energy converted into biomass by a higher trophic level over the energy of food resources available at the lower trophic level. The formula is as follows :

Ecological efficiency =

$$\frac{\text{Energy in biomass production at trophic level}}{\text{Energy in biomass production at previous trophic level}} \times 100$$

ANSWER-KEY										
<b>Q.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>A.</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>D</b>	<b>D</b>	<b>A</b>	<b>D</b>	<b>A</b>	<b>A</b>
<b>Q.</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>A.</b>	<b>D</b>	<b>A</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>D</b>	<b>B</b>