Exercise-1

✍ **Marked Questions are for Revision Questions.**

ONLY ONE OPTION CORRECT TYPE

SECTION - A # INTRODUCTION, BIOTIC COMPONENTS OF ECOSYSTEM

1.✍ Read the following statement A to D.
(A) An ecosystem can be visualised as a functional unit of nature.
(B) Ecosystem varies greatly in size from a small pond to a large forest or a sea.
(C) Many ecologists regard the entire biosphere as a global ecosystem
(D) Crop field & an aquarium may also be considered as natural ecosystem
How many of the above statements are correct.
(1) 1 (2) 2 (3) 3 (4) all are correct

2. The amount of living matter present in a population of a particular trophic level is called as -
(1) Standing crop (2) Standing quality (3) Both of these (4) Standing state

3.✍ An ecosystem is composed of-
(a) Producer
(b) Primary consumers
(c) Secondary consumer
(d) Decomposers. Highest level of energy is in
(1) a (2) b (3) c (4) d

4.✍ Which of the following one occurs in abiotic components of an ecosystem
(1) Flow of energy (2) Cycling of minerals
(3) Consumer (4) Flow of energy and cycling of minerals

5.✍ Pond is
(1) Biome (2) Natural ecosystem (3) Artificial ecosystem (4) None

6.✍ Which shows the significance of ecosystem
(1) Energy flow (2) Mineral flow (3) Both of the above (4) Mass flow

7.✍ The creating force of an any ecosystem is
(1) Organic fuels, carbohydrates (2) Biomass
(3) Solar energy (4) Producers

SECTION - B # PRODUCTIVITY, DECOMPOSITION, ENERGY FLOW, FOOD CHAIN, FOOD WEB, ECOLOGICAL PYRAMIDS

1.✍ The components of the ecosystem are seen to function as a unit when we consider the following aspects
(A) Productivity (B) Decomposition
(C) Energy Flow (D) Nutrient cycling
(1) only A & C (2) only B & C (3) only A, B & C (4) All

2. _____(i)_____is defined as the amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis expressed as weight (g^{-2}) or energy (K cal m^{-2}) the rate of biomass production is called _____(ii)_____, (i) & (ii) are respectively.

(1) (i) Primary production (ii) Productivity
(2) (i) Secondary productivity (ii) Primary production
(3) (i) Productivity (ii) Primary production
(4) (i) Primary production (ii) Secondary productivity

3. The gross production minus respiration in an ecosystem is indicated as -

(1) Net production (2) Secondary production
(3) Net storage (4) Net primary production

4. The biotic and abiotic components of the ecosystem are connected through

(1) Standing quality (2) Climatic regime
(3) Transducers (4) Humification and mineralization

5. The rate of storage at consumer level is

(1) Secondary productivity (2) Tertiary productivity
(3) Both of these (4) Net productivity

6. The SO_2 is returned to the atmosphere by

(1) Metabolism of producers (2) Metabolism of consumers
(3) Both of these (4) Combustion of fuel

7. The immediate surroundings of an ecosystem are called

(1) Macroenvironment (2) Microenvironment (3) Biosphere (4) Both (1) and (2)

8. Organisms which acquire energy and nutrients by digesting the organic molecules of living organisms are called

(1) Producers (2) Consumers (3) Detritivores (4) None of the above

9. Net community productivity (NCP) is the

(1) Total rate of photosynthesis
(2) Chemical energy left utilization by plants
(3) Rate of storage of organic matter not used by heterotrophs
(4) None of the above

10. The rate at which new tissues are formed in producers in the ecosystem is

(1) NSP (2) GSP (3) NPP (4) GPP

11. If decomposers are removed from ecosystem, Then following will be influenced

(1) Biosphere (2) Bio-geochemical cycle
(3) Producers (4) Consumers

12. Nitrogen is a critical element in an ecosystem because

(1) It is labile element
(2) Its abundant amount present in atmosphere
(3) Nitrogen fixation takes place through microorganisms
(4) It is an essential plant element

13. According to Odum, the percentage of net primary production of total light intake is
(1) 10% (2) 1% (3) 0.15% (4) 1.5%

14. The rate at which light energy is converted to chemical energy of organic molecules in the ecosytem's
(1) Net primary productivity (2) Net secondary productivity
(3) Gross Primary productivity (4) Gross secondary productivity

15. The dominant second trophic level in a lake ecosystem is
(1) Phytoplankton (2) Zooplankton (3) Benthos (4) Nekton

16. A food chain consists of -
(1) Producers, carnivores and decomposers (2) Producers, herbivores and carnivores
(3) Producers and primary consumers (4) Producers, consumers and decomposers

17. In a parasitic food chain which trophic level is represented by bugs and lices
(1) T_4 (2) T_3 (3) T_2 (4) T_1

18. Which of these is the food chain which runs from larger to smaller organisms
(1) Grazing food chain (2) Predator food chain
(3) Saprophytic food chain (4) Parasitic food chain

19. The food chain which begins from plants and goes from a smaller to a larger animals is
(1) Parasitic food chain (2) Predator food chain (3) Detritus food chain (4) Saprophytic food chain

20. A detritus food chain in comparison to grazing food chain is
(1) Equal (2) Broader (3) Longer (4) Shorter

21. A food chain starts from
(1) Nitrogen fixing organisms (2) Photosynthetic organisms
(3) Respiration (4) Decomposers

22. Food webs are 3-D web of interrelations in which several food chains are interlinked. It helps to provide
(1) Alternate pathways for flow of energy
(2) More variety and quality of food at each trophic level
(3) Shelter
(4) All of these

23. What is the relation between food web and stability of ecosystem
(1) Simpler the web, higher the stabililty of system
(2) Higher the complication of web, higher the stability of system
(3) More the webs, Higher the stability of system
(4) None of the above

24. Source of Energy in organisms is
(1) Sunlight (2) Water (3) Nuclear energy (4) None of the above

25. Which of the following one is correct for a food chain-
(1) Grass-Grasshopper-Frog- Snake - Hawk (2) Grasshopper-Grass-Snake-Frog- Hawk
(3) Hawk- Grasshopper-Grass-Frog-Snake (4) Frog-Snake-Hawk- Grasshopper -Grass

26. Process of eating and being eaten is a
(1) Biological process (2) Food chain
(3) Producer-consumer relationship (4) All of the above

27. Energy enters in an ecosystem through
(1) Herbivorous (2) Carnivorous (3) Producers (4) Decomposers

28. The type of food chain in which organic matter decomposed is converted into energy rich compounds is called -
(1) Detritus food chain (2) Grazing food chain (3) Cybernetics (4) None of the above

29. One of Eltonian pyramids have to be upright always
(1) Biomass (2) Energy (3) Number (4) All of these

30. The best arrangement of an energy system consisting of hawks, mice, snakes and grasses is
(1) Grass, mice, snake, hawk (2) Grass, snake, hawk, mice
(3) Grass, mice, hawk, snake (4) Mice, snake, hawk, grass

31. If a big fish eats small fish which eats Hydra who in turn water fleas; water fleas in turn eat phytoplankton. In this chain, water fleas will be -
(1) Producers (2) Primary consumers
(3) Secondary consumers (4) Top consumer

32. Food chain refers to -
(1) A number of human beings forming a chain for food
(2) The transfer of food energy from producers to consumers
(3) Animals near a source of food
(4) None of the above

33. A group of interconnected food chains is called -
(1) Pyramid of energy (2) Food web (3) Food cycle (4) Complex food chain

34. Energy flow in ecosystem is
(1) Unidirectional (2) Bidirectional (3) Multidirectional (4) None of the above

35. The primary consumers in pond ecosystem is
(1) Phytoplankton (2) Zooplankton (3) Fishes (4) Bacteria

36. The ecosystem of a pond is referred to as
(1) Lentic (2) Lotic (3) Xeric (4) Benthic

37. Which of the following does not contribute directly to the recycling pathways of trophics
(1) Bacteria and fungi feeders (2) Plants
(3) Carnivores (4) Herbivores

38. If the primary producers are absent from any ecosystem which of the following will occurs
(1) Herbivores will not survive
(2) Carnivores will not survive
(3) Both will be disintegrated because of food absence
(4) No change will take place

39. The pyramid of number for tree ecosystem is-
(1) Upright (2) Spindle shaped (3) Inverted (4) 2 or 3 both

40. They can be put in the category of primary consumers
(1) Eagles and tigers (2) Fishes and whales (3) Snakes and frogs (4) Insects and cattles

41. The decomposers in an ecosystem constitute the following trophic level -
(1) T_1 (2) T_3 (3) T_5 (4) T_4

42. If all the green plants were to disappear from the earth
(1) All the animal will die
(2) Only the herbivores will die
(3) Only the carnivores will die
(4) It will not matter to any one because chemosynthetic bacteria will produce food for all

43. In any given ecosystem, the number of individuals of species remain more or less constant over a period of time. This constancy of numbers in maintained by
(1) Parasites (2) Predators (3) Human beings (4) Available food

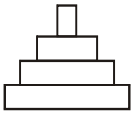
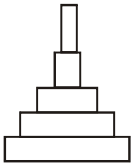
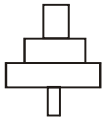
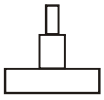
44. The ecological pyramids were first designed by
(1) Clements (2) Kormondy (3) Warming (4) Elton

45. The pyramid of biomass in a parasitic ecosystem is
(1) Upright (2) Inverted (3) Linear (4) Rhomboidal

46. The cybernetic of an ecosystem refers to
(1) Harvest index (2) A feed back mechanism
(3) Regulation of equilibrium (4) Reverse energy flow

47. Which of the following animals is dominant in desert ecosystem
(1) Leopard (2) Lizard (3) Hyla (4) Tiger

48. In the diagram, different pyramids are shown. Which one is the pyramid of numbers in a temperate forest

(1)  (2)  (3)  (4) 

49. Food level of an ecosystem is called
(1) Herbivorous level (2) Trophic level (3) Consumer level (4) Producer level

50. Who proposed the law of ecological tith for food chain
(1) Lindman (2) Tensely (3) Alton (4) Rounkier

51. Bacteria consider in an ecosystem as
(1) Micro consumer (2) Macroconsumer (3) Primary consumer (4) Secondary consumer

52. Which ecosystem is most stable
(1) Forest (2) mountain (3) Bay (4) Desert

53. Decomposers are
(1) Autotrophs (2) Heterotrophs (3) Autoheterotrophs (4) Organotrophs

54. Total amount of living substances present in different levels of a chain is showed as
(1) Pyramid of biomass (2) Pyramid of energy (3) Pyramid of number (4) All of the above

55. Which of the following one present at the top of an ecological pyramid
(1) Herbivorous (2) Carnivorous (3) Producer (4) None

56. Pyramid of biomass in forest is
(1) Inverted (2) Always upright (3) Irregular (4) Regular

57. In which place, herbivores take place in upright pyramid of biomass
(1) 1 (2) 2 (3) 3 (4) 4

58. In an aquatic ecosystem..... is the major conduit for energy flow.
(1) Parasites (2) DFC (3) Saprotrophs (4) GFC

59. Small standing crop of phytoplankton supports large standing crop of zooplankton. This statement is given for
(1) Inverted pyramid of number (2) Upright pyramid of biomass
(3) Upright pyramid of number (4) Inverted pyramid of biomass

SECTION - C # ECOLOGICAL SUCCESSION, BIOGEOCHEMICAL & SEDIMENTARY CYCLES, ECOSYSTEM SERVICES, BIOMES

1. Which of the following is/are correct with request to ecological succession.
(A) An important characteristics of all communities is that composition & structure constantly change in response to the changing environment conditons.
(B) This change is orderly and sequential, parallel with the changes in the physical environment
(C) These changes lead finally to a community that is called climax community.
(D) The species that invade a bare area are called climax community.
(1) Only A & D (2) Only A & B
(3) A, B & C (4) All are correct

2. Secondary succession begins in areas where natural biotic communities have been destroyed due to
(1) abandoned farm lands (2) burned or cut forests
(3) lands that have been flooded (4) All of these

3. The entire sequence of communities that successively change in a given area are called
(1) Niche species (2) Climax communities
(3) Pioneer speceis (4) Sere(s)

4. Lichen is pioneer in succession in
(1) Hydrosere (2) Lithosere (3) Psammosere (4) Xerosere

5. The correct order of succession in xerarch is
(1) Annual herb stage, perennial herb stage, lichen moss stage, scrub stage, forest
(2) Perennial herb stage, annual herb stage, lichen moss stage, scrub stage, forest
(3) Lichen moss stage, annual herb stage, perennial herb stage, scrub stage, forest
(4) Scrub stage, forest, annual herb stage, perennial herb stage, lichen moss stage
(5) Forest, scrub stage, annual herb stage, perennial herb stage, lichen moss stage.

6. Hydrological cycle comprises of two overlapping cycles
(1) Surface water and atmospheric cycles (2) Oceanic and fresh water cycles
(3) Ground water and atmospheric cycles (4) Global and smaller cycles

7. The nature of climax community depends upon
(1) Climate (2) Water (3) Soil fertility (4) Temperature

8. The free floating organisms in open sea and the shore are collectively called
(1) Plankton (2) Nektons (3) Sea anemone (4) Benthoic

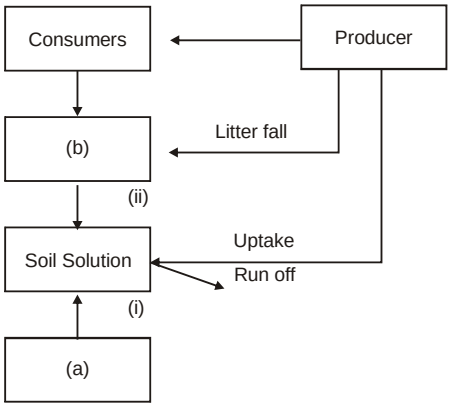
9. A submerged rooted hydrophyte is
(1) Trapa (2) Vallisnaria (3) Utricularia (4) None

10. Pneumatophore roots present in
(1) Mesophyte (2) Xerophyte (3) Hydrophyte (4) Halophyte

11. Which of the following biome is tree less
(1) Savannah biome (2) Chapparal biome (3) Temperate biome (4) Tundra biome

12. Pneumatophores present in
(1) Rhizophora (2) Orobranchia (3) Pistia (4) None

13.



In above simplified model of phosphorus cycling in a terrestrial ecosystem (a), (b), (i), (ii) are respectively-

(1) (a) Rockminerals,	(b) Detritus	(i) Weathering	(ii) – Decomposition
(2) (a) Detritis,	(b) Rock minerals	(i) Weathering	(ii) – Decomposition
(3) (a) Rockminerals,	(b) Detritus	(i) Decomposition	(ii) – Weathering
(4) (a) Detritis	(b) Rock minerals	(i) Decomposition	(ii) – Weathering

14. Which statement is/are correct with respect to ecosystem services.

(A) Healthy ecosystems are the base for a wide range of economic, environmental and aesthetic goods & services

(B) The products of ecosystem processes are named as ecosystem services

(C) Researches have put an average price tag of US $ 33 trillion a year on fundamental ecosystems services

(1) Only A (2) Only A & B (3) All A, B & C (4) None

MISCELLANEOUS QUESTIONS

1. Select the wrong pair.

(1) Productivity of oceans – 70 billion tons

(2) NPP – GPP-R

(3) Annual net primary productivity – 170 billion tons

(4) Term Ecosystem – Tansley

2. Read statement A to C

(A) The consumers that feed on the herbivores are carnivores or more correctly primary carnivores.

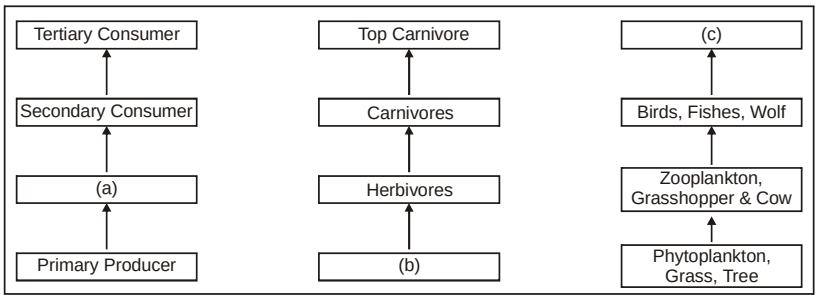
(B) The detritus food chain (DFC) begin with dead organic matter

(C) Based on the source of nutrition or food, organisms occupy a specific place in the food chain that is known as their trophic level

How many of the above statements are wrong.

(1) 1 (2) 2 (3) 3 (4) None of these

3.



In above representation of trophic levels in an ecosystem (a), (b) and (c) are respectively

(1) (a) – Primary consumer (b) – Second trophic level (c) –Birds

(2) (a) – Secondary producer (b) – First trophic level (c) –Cow

(3) (a) – Primary consumer (b) – Third trophic level (c) –Lion

(4) (a) – Primary consumer (b) – First trophic level (c) –Lion

4. Which statements is/are correct

(A) In most ecosystem all the pyramids of number, of energy and biomass are upright

(B) Energy at a lower trophic level is always more than at a higher level

(C) The pyramid of biomass in sea is generally inverted because the biomass of fishes far exceed that of phytoplankton

(D) Saprophytes are not given any place in ecological pyramids eventhough they play vital role in the ecosystem

(1) Only A & C (2) Only C & D (3) A, B & C (4) All are correct

5. Which of the following is an ecosystem service provided by a natural ecosystem?
(1) Cycling of nutrients
(2) Prevention of soil erosion
(3) Pollutant absorption & reduction of the threat of global warning
(4) All of the above

6. Which is/are correct regarding ecosystem services.
(A) Out of the total cost by various ecosystem services, the soil formation accounts for about 50%
(B) Contributions of other services like recreation & nutrient cycling are less than 10% each
(C) The cost of climate regulation & habitat for wild life are about 6% each
(1) Only A & C (2) Only B & C (3) A, B & C (4) Only B & C

7. In upright pyramid of biomass, herbivores occupy the position
(1) 1 (2) 2 (3) 3 (4) 4

8. Savannah is found commonly in
(1) U.S.A. (2) U.S.S.R. (3) Australia (4) India

9. Last stage of plant succession is
(1) Ecotype (2) Seral community (3) Climax community (4) Ecotone

10. Bacteria and fungi are
(1) Scavengers (2) Primary consumers
(3) Secondary consumers (4) Decomposers.

11. Ultimate source of energy for living beings is
(1) Carbohydrates (2) Fats (3) Sunlight (4) ATP

12. Stratification is seen in
(1) Tundra (2) Temperate forest (3) Tropical forest (4) Desert

13. Grasslands of Asia are
(1) Savannah (2) Pampas (3) Steppes (4) Veldt

14. The term biocoenosis was coined by
(1) Darwin (2) Haeckel (3) Odum (4) Mobius

15. In biotic community, primary consumers are
(1) Carnivores (2) Omnivores (3) Herbivores (4) Detrivores

16. Each successive trophic level has
(1) Less total energy (2) More total energy
(3) Increased total energy (4) Non-estimated energy contents

17. Pyramid of numbers in grass ecosystem is
(1) Linear (2) Upright (3) Inverted (4) Negative

18. Conversion of organic nitrogenous compounds into ammonium compounds is called.
(1) Nitrification (2) Denitrification (3) Ammonification (4) Denaturation

19. Weathering of rocks makes phosphorus available to first

(1) Producers (2) Decomposers (3) Consumers (4) None of the above

20. The major forest types found in India is
(1) Subtropical deciduous (2) Tropical moist deciduous
(3) Tropical deciduous (4) Temperate deciduous

21. Energy enters in a food chain though
(1) Producers (2) Decomposers (3) Herbivores (4) Carnivores

22. If the decomposers become extinct, the most severely affected would be
(1) Noncycling of minerals (2) Damage to nitrogen fixation
(3) Biomagnification (4) Carnivores will be starved

23. Biome is
(1) Sum of ecosystems in a geographical area (2) Sum of ecosystems of the whole earth
(3) Biotic component of an ecosystem (4) Biotic potential of population

24. Broad-leaved Oaks are found in
(1) Tropical evergreen forest (2) Temperate deciduous forest
(3) North coniferous forest (4) Tropical deciduous forest

25. Source of maximum sulphur in reservoir of sulphur is
(1) Ocean (2) Lakes (3) Land (4) Rocks

26. Most primary productivity of pond is by
(1) Phytoplankton (2) Zooplankton (3) Floating plants (4) Red algae

27. Maximum absorption of rainfall water occurs in
(1) Tropical deciduous forest (2) Tropical evergreen forest
(3) Tropical savanna (4) Scrub forest

28. Energy transfer from one trophic level to another is
(1) 10% (2) 5% (3) 15% (4) 20%

29. Which is not correct
(1) In most ecosystems, the pyramids of numbers and biomass are upright
(2) In tree dominated ecosystem, the pyramid of numbers is inverted
(3) In deep water ecosystem, the pyramid of biomass is upright
(4) Pyramid of energy expresses mainly the rate of food production
(5) Total energy flow at successive trophic levels always decreases

30. Psammophytes are plants growing on soil
(1) Alluvial (2) Sandy (3) Alkaline (4) Acidic

31. Ecosystem having the highest primary productivity is
(1) Pond (2) Ocean (3) Desert (4) Forest

32. Extinction of a species in a food chain is compensated in
(1) Ecological pryamid (2) Food web (3) Food chain (4) None of the above

33. Detritus food chain begins with
(1) Bacteria (2) Viruses (3) Algae (4) Protozoa

34. Which one of the following shows detritus food chain
(1) grass, Insects, Snakes (2) Plankton, Small fishes, Large fishes
(3) Organic waste, Bacteria, Molluscs (4) All the above

35. If a single plant species is removed from a food web, then most likely
(1) An animal species will fill the unoccupied niche
(2) Other plants will produce enough food for herbivores
(3) Dependent herbivores will have to find new food sources
(4) Carnivores will be unaffected by the loss

36. Energy flow in an ecosystem is
(1) Unidirectional (2) Bidirectional
(3) Multi-directional (4) All of the above

37. Intermediate community between Pioneer and climax communities is called
(1) Seral community (2) Biotic community
(3) Temporary community (4) Ecosere

38. In parasitic food chain, the pyramid of number is
(1) Inverted (2) Upright (3) Linear (4) Upright and inverted

39. Ten percent law of energy transfer in a food chain is given by
(1) Schimper (2) Elton (3) Haeckel (4) Lindemann

40. In a food chain the largest population is that of
(1) Producers (2) Decomposers
(3) Secondary consumers (4) Primary consumers

41. If all the microorganisms are destroyed on earth then
(1) The earth will be covered by dead bodies
(2) We cannot produce antibodies
(3) All life form will become immortal
(4) Soil will be depleted from nitrogen

42. A virgin ecosystem can be seen in
(1) Eastern Himalaya (2) Shimla (3) Nainital (4) Silent valley of kerala

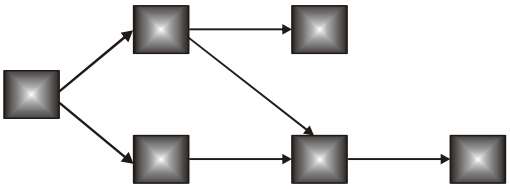
43. Ecosystem contains
(1) Food web (2) Food chain (3) Both 1 and 2 (4) None of the above

Exercise-2

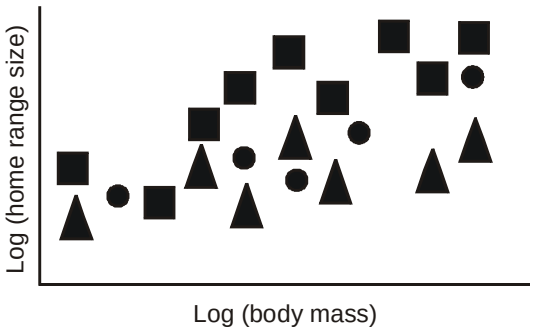
1. Members of a macroscopic food chain of a marine ecosystem are enlisted below. Numbers in front of them indicate the carbon assimilated in g/m^2/year. **(INBO-2009)**

1. Filter feeders	500
2. Surf zooplankton	400
3. Surf diatoms	350
4. Fishes	140
5. Benthic carnivores	40
6. Piscivorous fishes	8

Place them in the appropriate boxes in the following food chain. (Each member should be used only once). Fill your answers in the answer sheet.



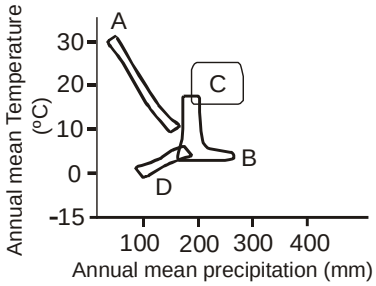
2. The relationship between the home range size and weight of three kinds of mammals is depicted in the graph. **(INBO - 2010)**



The three symbols are likely to represent mammals exhibiting.

▲	●	■
(1) Carnivory	Herbivory	Omnivory
(2) Herbivory	Omnivory	Carnivory
(3) Omnivory	Carnivory	Herbivory
(4) Omnivory	Herbivory	Carnivory

3. A climograph of various biomes is given-below. The biomes A, B, C and D represent **(INBO - 2010)**



	A	B	C	D
(1)	Coniferous forest	Tundra	Temperate broadleaf forest	Desert
(2)	Desert	Coniferous forest	Temperate broadleaf forest	Tundra
(3)	Coniferous forest	Desert	Temperate broadleaf forest	Tundra
(4)	Desert	Tundra	Coniferous forest	Temperate broadleaf forest

4. If you compare adults of two herbivore species of different sizes, but from the same geographical area, the amount of faeces produced per kg body weight would be **[KVPY_2010_SB]**

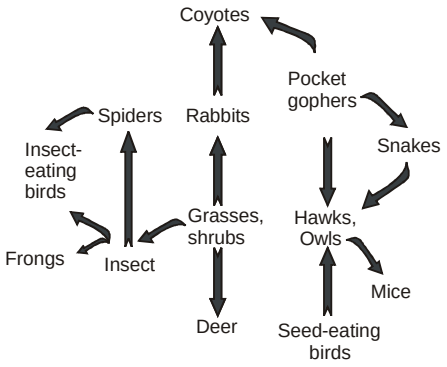
(1) More in the smaller one than the larger one

(2) More in the larger one than the smaller one

(3) Roughly the same amount in both

(4) Not possible to predict which would be more

5. Study the following diagram and answer the question which follows



In this food web, the hawk would be a third-level consumer, if he eat : **(5th NSO II L)**

(1) Seed- eating birds (2) Pocket gophers (3) Rabbits (4) Snakes

6. Of the following statements which ones apply for a climax ecosystem? **[NSEB 2011]**

i. More organic matter occurs as dead than live organisms

ii. Production to community respiration ratio is 1

iii. There is maximum niche specialization and minimum niche separation

iv. There are many large and long lived individuals

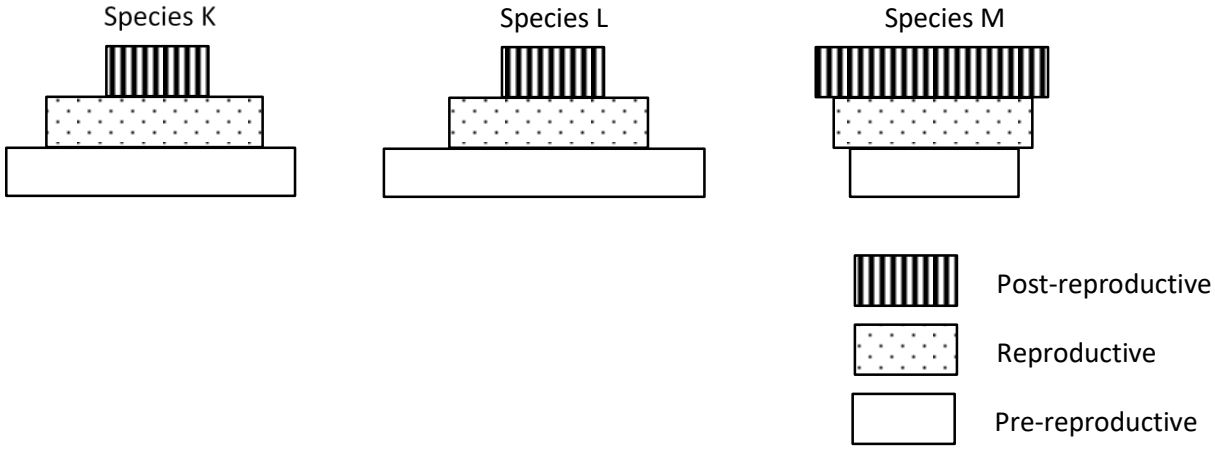
(1) i, ii and iv (2) ii, iii and i v (3) i, iii and iv (4) Only i and iv

7. The primary consumers sustain on: **[NSEB 2011]**

(1) Gross primary production (2) Net primary production

(3) Secondary production (4) Net community production

8. A community comprises of three species. The pyramids below show the distribution of pre-reproductive, reproductive and post-reproductive individuals. If the numerical representation of all the three species in the community is similar, which of the following statements would be true? **(INBO 2012)**



I. Species K is a growing population

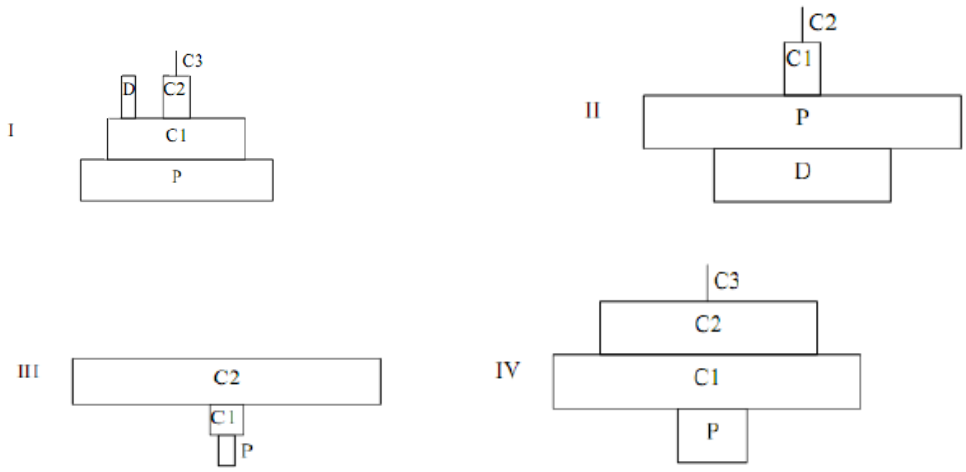
II. Species L is a growing population

Ill. Species M is a decreasing population

IV. The community is increasing in population.

(1) I and II only (2) II and III only (3) I, II and III only (4) All the four

9. Ecological pyramids depict the inter-relationships between the various trophic levels. Four pyramids are shown below. Match them against the correct description **(INBO 2012)**



(a) Pyramid of biomass in a tree ecosystem: _____

(b) Number pyramid of grassland ecosystem: _____

(c) Pyramid of biomass in a pond: _____

10. In an aquatic ecosystem, a student observed that on the lowest tier of the biomass. Pyramid was much narrower than the rest. The main producers of this ecosystem most likely are: **(NSEB-2013)**

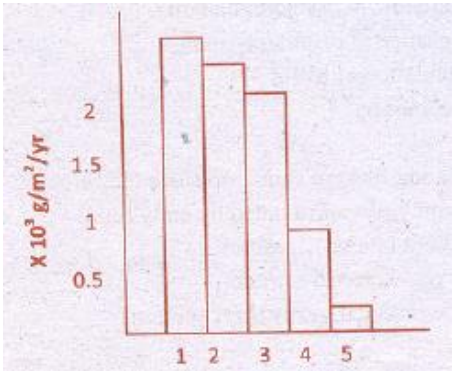
(1) single-celled protists (2) aquatic plants

(3) grasses (4) all the above.

11. Average primary production ($g/m^2/yr$) of the following has been depicted in the accompanying diagram.

i. Tropical rain forests ii. Tundra iii. Swamps iv. Taiga v. Coral reef

Match these with the columns from 1 to 5 **(NSEB-2013)**



(1) v, i, iii, iv, ii (2) i, v, iv, iii, ii (3) ii, iv, iii, v, i (4) iv, i, iii, iv, ii

12. Which of the ecological parameters, when represented graphically, show inverted pyramid? **(NSEB-2013)**

(1) Pyramid of number in pond ecosystem.

(2) Pyramid of number in parasitic ecosystem

(3) Pyramid of biomass in pond ecosystem

(4) Both 2 and 3

13. In a given food chain suppose the amount of energy at the fourth tropic level is 6 KJ, what will be the energy available at producer level? **(NSEB-2013)**

(1) 0.6 KJ (2) 60KJ (3) 600KJ (4) 6000KJ

14. A bare rock is exposed for colonization of life forms. The correct sequence of seres will be:

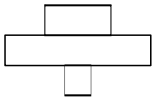
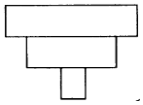
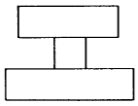
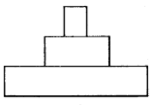
(1) Lichen, fern , moss, grass, herb (2) Fern, moss, grass, herb, lichen

(3) Moss, fern, grass, lichen, herb (4) Lichen, moss, fern, grass, herb

15. Data collected after survey in an evergreen forest patch was; **(NSEB-2014)**

* 425 Trees
* 2,80,000 Primary consumers
* 2,05,000 Secondary consumers

Which of the following pyramid of biomass correctly represents the data?

(1)  (2)  (3)  (4) 

16. A few statements regarding food webs / trophic levels are made. Choose the correct statement. **(NSEB- 2015)**

(1) Trophic efficiencies in an ecosystem must always be higher than production efficiencies.

(2) A small standing crop of primary producers can never support a larger standing crop of primary consumers in any aquatic ecosystem.

(3) The amount of chemical energy in the consumer's food that is converted to their own biomass during a given period is called the primary production of the ecosystem.

(4) Most biomass (dry organic weight) pyramids show a sharp decrease in biomass at successively higher trophic levels.

Exercise-3

PART - I : NEET / AIPMT QUESTION (PREVIOUS YEARS)

1. Maximum biomass of autotrophs in oceans is made up of **(AIPMT-2000)**

(1) Benthic brown algae, coastal red algae and daphnids

(2) Benthic diatoms and marine viruses

(3) Sea grasses and slime moulds

(4) Free floating microalgae, cyanobacteria and nanoplankton

2. Frog feeding on herbivorous insect is **(AIPMT-2000)**

(1) Primary consumer (2) Secondary consumer

(3) Tertiary consumer (4) Top carnivore

3. Decomposers are **(AIPMT-2001)**

(1) Animalia and Monera (2) Protista and Animalia

(3) Fungi and Plantae (4) Bacteria and Fungi

4. Which pair is mismatched **(AIPMT-2004)**

(1) Tundra –Permafrost (2) Savanna – Acacia trees

(3) Prairie–Epiphytes (4) Coniferous forest – Evergreen trees

5. Highest value in $g/m^2/yr$ of a grassland ecosystem would be **(AIPMT-2004)**

(1) Gross primary production (2) Net primary production

(3) Secondary production (4) Tertiary production

6. An easily disturbed ecosystem which can recover after some time after the stoppage of damaging factor is of **(AIPMT-2004)**

(1) Low stability and high resilience (2) High stability and high resilience

(3) Low stability and low resilience (4) High stability and low resilience

7. Which of the following is not used for construction of ecological pyramids **(AIPMT-2006)**

(1) Fresh weight (2) Dry weight

(3) Number of individuals (4) Rate of energy flow

8. Highest annual net primary productivity is of **(AIPMT-2007)**

(1) Tropical deciduous forest (2) Temperate evergreen forest

(3) Temperate deciduous forest (4) Tropical rain forest

9. Consider the following statements concerning food chains **(AIPMT-2008)**

(a) Removal of 80% tigers from an area resulted in greatly increased growth of vegetation

(b) Removal of most of the carnivores resulted in an increased population of deer

(c) The length of food chains is generally limited to 3–4 trophic levels due to energy loss

(d) The length of food chains may vary from 2-8 trophic levels

Which two of the statements are correct?

(1) a, d (2) a, b (3) b, c (4) c, d

10. Which one of the following types of organisms occupy more than one trophic level in a pond ecosystem. **(AIPMT-2009)**

(1) Frog (2) Phytoplankton (3) Fish (4) Zooplankton

11. Study the four statements (a-d) given below and select the two correct ones out of them. **(AIPMT-2010)**

(a) A lion eating a deer and a sparrow feeding on grain are ecologically similar in being consumers

(b) Predator star fish *pisaster* helps in maintaining species diversity of some invertebrates

(c) Predators ultimately lead to the extinction of prey species

(d) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders

The two correct statements are

(1) (c) and (d) (2) (a) and (d) (3) (a) and (b) (4) (b) and (c)

12. The biomass available for consumption by the herbivores and the decomposers is called **(AIPMT-2010)**

(1) Secondary productivity (2) Standing crop

(3) Gross primary productivity (4) Net primary productivity

13. Which one of the following is one of the characteristics of a biological community. **(AIPMT-2010)**

(1) Natality (2) Mortality (3) Sex-ratio (4) Stratification

14. Large Woody Vines are more commonly found in: **(AIPMT Pre.-2011)**

(1) Temperate forest (2) Mangroves (3) Tropical rainforests (4) Alpine forests

15. Which one of the following statements is correct for secondary succession? **(AIPMT Pre.-2011)**

(1) It begins on a bare rock

(2) It occurs on a deforested site

(3) It follows primary succession

(4) It is similar to primary succession except that it has a relatively fast pace

16. Which one of the following statements for pyramid of energy is incorrect, whereas the remaining three are correct? **(AIPMT Pre.-2011)**

(1) Its base is broad

(2) It shows energy content of different trophic level organisms

(3) It is inverted in shape

(4) It is upright in shape

17. Both, hydrarch and xerarch successions lead to: **(AIPMT mains-2011)**

(1) Medium water conditions (2) Xeric conditions

(3) Highly dry conditions (4) Excessive wet conditions

18. The breakdown of detritus into smaller particles by earthworm is a process called **(AIPMT mains-2011)**

(1) Humification (2) Fragmentation (3) Mineralisation (4) Catabolism

19. Which one of the following is not a gaseous biogeochemical cycle in ecosystem? **(AIPMT Pre.- 2012)**

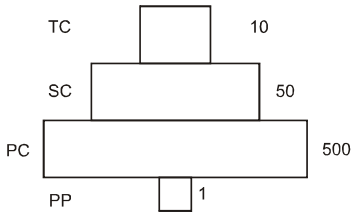
(1) Sulphur cycle (2) Phosphorus cycle (3) Nitrogen cycle (4) Carbon cycle

20. Identify the possible link "A" in the following food chain: **(AIPMT Pre.- 2012)**

Plant $\rightarrow$ insect - frog $\rightarrow$ "A" $\rightarrow$ Eagle

(1) Rabbit (2) Wolf (3) Cobra (4) Parrot

21. Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels? **(AIPMT Pre.- 2012)**



(1) Level PC is "insects" and level SC is "small insectivorous birds".

(2) Level PP is "phytoplanktons" in sea and "Whale" on top level TC

(3) Level one PP is "pipal trees" and the level SC is "sheep".

(4) Level PC is "rats" and level SC is "cats".

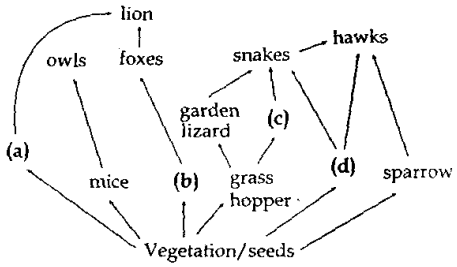
22. Which one of the following is not a functional unit of an ecosystem **(AIPMT Pre.-2012)**

(1) Energy flow (2) Decomposition (3) Productivity (4) Stratification

23. The upright pyramid of number is absent in **(AIPMT Pre.- 2012)**

(1) Pond (2) Forest (3) Lake (4) Grassland

24. Identify the likely organisms (a), (b), (c) and (d) in the food web shown below: **(AIPMT Mains- 2012)**



Options

	(a)	(b)	(c)	(d)
(1)	deer	rabbit	frog	rat
(2)	dog	squirrel	bat	deer
(3)	rat	dog	tortoise	crow
(4)	squirrel	cat	rat	pigeon

25. The rate of formation *of* new organic matter by rabbit in a grassland, is called: **(AIPMT Mains-2012)**

(1) Net productivity (2) Secondary productivity

(3) Net primary productivity (4) Gross primary productivity

26. The second stage of hydrosere is occupied by plants like: **(AIPMT Mains-2012)**

(1) Azolla (2) Typha (3) Salix (4) Vallisneria

27. Natural reservoir of phosphorus is: **(NEET-2013)**

(1) Animal bones (2) Rock (3) Fossils (4) Sea water

28. Secondary productivity is rate of formation of new organic matter by: **(NEET-2013)**

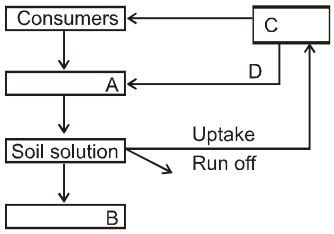
(1) Parasite (2) Consumer (3) Decomposer (4) Producer

29. If 20 J of energy is trapped at producer level, then how much energy will be available to peacock as food in the following chain? **(AIPMT- 2014)**

plant $\rightarrow$ mice $\rightarrow$ snake $\rightarrow$ peacock

(1) 0.02 J (2) 0.002 J (3) 0.2 J (4) 0.0002 J

30. Given below is a simplified model of phosphorus cycling in a terrestrial ecosystem with four blanks (A-D). Identify the blanks. **(AIPMT- 2014)**



Options :

	A	B	C	D
(1)	Rock minerals	Detritus	Litter fall	Producers
(2)	Litter	Producers	Rock minerals	Detritus
(3)	Detritus	Rock minerals	Producer	Litter fall
(4)	Producers	Litter fall	Rock minerals	Detritus

31. Match the following and select the correct option: **(AIPMT-2014)**

(a) Earthworm (i) Pioneer species

(b) Succession (ii) Detrivore

(c) Ecosystem service (iii) Natality

(d) Population growth (iv) Pollination

	a	b	c	d
(1)	(i)	(ii)	(iii)	(iv)
(2)	(iv)	(i)	(iii)	(ii)
(3)	(iii)	(ii)	(iv)	(i)
(4)	(ii)	(i)	(iv)	(iii)

32. Vertical distribution of different species occupying different levels in a biotic community is known as: **(AIPMT-2015)**

(1) Stratification (2) Zonation

(3) Pyramid (4) Divergence

33. The mass of living material at a trophic level at a particular time is called: **(AIPMT-2015)**

(1) Standing state (2) Net primary productivity

(3) Standing crop (4) Gross primary productivity

34. In an ecosystem the rate of production of organic matter during photosynthesis is termed as: **(AIPMT-2015)**

(1) Gross primary productivity (2) Secondary productivity

(3) Net productivity (4) Net primary productivity

35. Secondary Succession takes place on/in: **(AIPMT-2015)**

(1) Degraded forest (2) Newly created pond

(3) Newly cooled lava (4) Bare rock

36. Most animals are tree dwellers in a: **(AIPMT-2015)**

(1) thorn woodland (2) temperate deciduous forest

(3) tropical rain forest (4) coniferous forest

37. The term ecosystem was coined by: **(NEET-1-2016)**

(1) E. Warming (2) E.P.Odum (3) A.G. Tansley (4) E. Haeckel

38. The primary producers of the deep-sea hydrothermal vent ecosystem are **(NEET-2-2016)**

(1) coral reefs (2) green algae

(3) chemosynthetic bacteria (4) blue-green-algae

39. Plants which produce characteristic Pneumatophores and show vivipary belong to **(NEET-2017)**

(1) Mesophytes (2) halophytes (3) Psammophytes (4) Hydrophytes

40. Which ecosystem has the maximum biomass **(NEET-2017)**

(1) Forest ecosystem (2) Grassland ecosystem

(3) Pond ecosystem (4) Lake ecosystem

41. Presence of plants arranged into well-defined vertical layers depending on their height can be seen best in **(NEET-2017)**

(1) Tropical Savannah (2) Tropical Rain Forest

(3) Grassland (4) Temperate Forest

42. Niche is **(NEET-2018)**

(1) all the biological factors in the organism's environment

(2) the functional role played by the organism where it lives

(3) the range of temperature that the organism needs to live

(4) the physical space where an organism lives

43. What type of ecological pyramid would be obtained with the following data? **(NEET-2018)**

Secondary consumer : 120 g

Primary consumer : 60 g

Primary producer : 10 g

(1) Inverted pyramid of biomass (2) Upright pyramid of biomass

(3) Upright pyramid of numbers (4) Pyramid of energy

44._ Pneumatophores occur in **(NEET-2018)**
(1) Halophytes (2) Submerged hydrophytes
(3) Carnivorous plants (4) Free-floating hydrophytes

45. Which of the following' ecological pyramids is generally inverted? **(NEET-I-2019)**
(1) Pyramid of biomass in a sea (2) Pyramid of numbers in grassland
(3) Pyramid of energy (4) Pyramid of biomass in a forest.

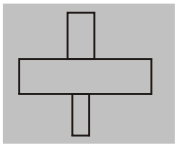
PART - II : AIIMS QUESTION (PREVIOUS YEARS)

1. Moderate rain during summer produces **(AIIMS-1998)**
(1) Desert (2) Grassland (3) Scrub forest (4) Deciduous forest.

2. Relationships in a ecosystem can be depicted through **(AIIMS-1998)**
(1) Pyramid of energy (2) Pyramid of biomass (3) Pyamid of number (4) All the above.

3. Great Barrier Reef along east coast of Australia is a **(AIIMS-2004)**
(1) Population (2) Community (3) Biome (4) Ecosystem

4. The accompanying figure represents an ecological pyramid. It is **(AIIMS-2005)**



(1) Pyramid of numbers in grassland (2) Pyramid of biomass in fallow land
(3) Pyramid of biomass in lake (4) Energy pyramid in a spring

5. The great barrier reef along the east coast of Australia can be categorised as **(AIIMS-2008)**
(1) Biome (2) Ecosystem (3) Population (4) Community

6. Whale is **(AIIMS-2012)**
(1) Primary producer (2) Carnivorous, secondary consumer
(3) A decomposer (4) Herbivorous

7. Which one of the following is not function of an ecosystem? **(AIIMS-2013)**
(1) Energy flow (2) Decomposition (3) Productivity (4) Stratification

8. Most animals that live in a deep oceanic waters are **(AIIMS-2016)**
(1) Tertiary consumers (2) Detrivores
(3) Primary consumers (4) Secondary consumers

9._ Full form of GFC is : **(AIIMS-III-2018)**
(1) Grazing food chain (2) Grazing fish chain
(3) Gross food chain (4) Green forest conservation

Answers

EXERCISE - 1

SECTION - A

1.	(3)	**2.**	(1)	**3.**	(1)	**4.**	(4)	**5.**	(2)	**6.**	(3)	**7.**	(3)

SECTION - B

1.	(4)	**2.**	(1)	**3.**	(4)	**4.**	(4)	**5.**	(1)	**6.**	(4)	**7.**	(2)
8.	(2)	**9.**	(3)	**10.**	(3)	**11.**	(2)	**12.**	(3)	**13.**	(2)	**14.**	(3)
15.	(2)	**16.**	(2)	**17.**	(2)	**18.**	(4)	**19.**	(2)	**20.**	(4)	**21.**	(2)
22.	(1)	**23.**	(2)	**24.**	(1)	**25.**	(1)	**26.**	(2)	**27.**	(3)	**28.**	(1)
29.	(2)	**30.**	(1)	**31.**	(2)	**32.**	(2)	**33.**	(2)	**34.**	(1)	**35.**	(2)
36.	(1)	**37.**	(2)	**38.**	(3)	**39.**	(4)	**40.**	(4)	**41.**	(3)	**42.**	(1)
43.	(4)	**44.**	(4)	**45.**	(1)	**46.**	(3)	**47.**	(2)	**48.**	(3)	**49.**	(2)
50.	(1)	**51.**	(1)	**52.**	(1)	**53.**	(2)	**54.**	(1)	**55.**	(2)	**56.**	(2)
57.	(2)	**58.**	(4)	**59.**	(4)								

SECTION - C

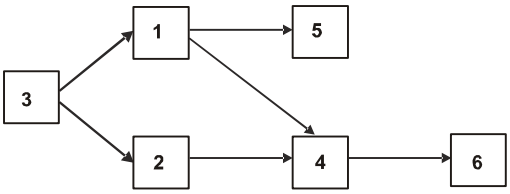
1.	(3)	**2.**	(4)	**3.**	(4)	**4.**	(2)	**5.**	(3)	**6.**	(1)	**7.**	(1)
8.	(1)	**9.**	(2)	**10.**	(4)	**11.**	(4)	**12.**	(1)	**13.**	(1)	**14.**	(3)

MISCELLANEOUS QUESTIONS

1.	(1)	**2.**	(4)	**3.**	(4)	**4.**	(4)	**5.**	(4)	**6.**	(3)	**7.**	(2)
8.	(3)	**9.**	(3)	**10.**	(4)	**11.**	(3)	**12.**	(3)	**13.**	(3)	**14.**	(4)
15.	(3)	**16.**	(1)	**17.**	(2)	**18.**	(3)	**19.**	(1)	**20.**	(3)	**21.**	(1)
22.	(1)	**23.**	(1)	**24.**	(2)	**25.**	(4)	**26.**	(1)	**27.**	(2)	**28.**	(1)
29.	(3)	**30.**	(2)	**31.**	(4)	**32.**	(2)	**33.**	(1)	**34.**	(3)	**35.**	(3)
36.	(1)	**37.**	(1)	**38.**	(1)	**39.**	(4)	**40.**	(1)	**41.**	(4)	**42.**	(4)
43.	(3)												

EXERCISE - 2

1.



2.	(2)	**3.**	(2)	**4.**	(1)	**5.**	(4)	**6.**	(1)	**7.**	(2)	**8.**	(4)
9.	(a) - II, (b) - II, (c) – III	**10.**	(1)	**11.**	(1)	**12.**	(4)	**13.**	(4)	**14.**	(4)		
15.	(4)	**16.**	(4)										

EXERCISE - 3

PART- I

1.	(4)	**2.**	(2)	**3.**	(4)	**4.**	(3)	**5.**	(1)	**6.**	(1)	**7.**	(4)
8.	(4)	**9.**	(3)	**10.**	(3)	**11.**	(3)	**12.**	(4)	**13.**	(4)	**14.**	(3)
15.	(2)	**16.**	(3)	**17.**	(1)	**18.**	(2)	**19.**	(2)	**20.**	(3)	**21.**	(1)
22.	(4)	**23.**	(2)	**24.**	(1)	**25.**	(2)	**26.**	(4)	**27.**	(2)	**28.**	(2)
29.	(1)	**30.**	(3)	**31.**	(4)	**32.**	(1)	**33.**	(3)	**34.**	(1)	**35.**	(1)
36.	(3)	**37.**	(3)	**38.**	(3)	**39.**	(2)	**40.**	(1)	**41.**	(2)	**42.**	(2)
43.	(1)	**44.**	(1)	**45.**	(1)								

PART- II

1.	(4)	**2.**	(4)	**3.**	(4)	**4.**	(3)	**5.**	(2)	**6.**	(2)	**7.**	(4)
8.	(2)	**9.**	(1)										