Chapter 4

Biological Classification

Solutions

SECTION - A

Objective Type Questions

(Kingdom Systems of Classification)

1. **Statement-1 :** Linnaeus classified plants into trees, shrubs and herbs, on the basis of morphological characters.

   Statement-2 : Aristotle divided animals into group - Anaima and Enaima.

   (1) Only statement-1 is correct

   (2) Only statement-2 is correct

   (3) Both statement-1 and statement-2 are correct

   (4) Both statement-1 and statement-2 are incorrect

Sol. Answer (2)

Aristotle classified plants into tree, shrubs and herbs

2. In members of which kingdom, nuclear membrane is absent?

   (1) Monera (2) Protista (3) Fungi (4) Plantae

Sol. Answer (1)

Nuclear membrane is absent in Prokaryotes (Monera)

3. In five kingdom classification, the kingdom that includes the blue-green algae, nitrogen-fixing bacteria and methanogenic archaebacteria, is

   (1) Monera (2) Protista (3) Fungi (4) Plantae

Sol. Answer (1)

Bacteria		**Kingdom**
Blue-green algae	–	Prokaryotes
Nitrogen-fixing bacteria	–	Prokaryotes
Methanogenic bacteria	–	Prokaryotes

4. Which one of the following is not the basis of five kingdom classification?

   (1) Cell structure (2) Body organisation

   (3) Reproduction (4) Reserve food material

Sol. Answer (4)

Five kingdom classification is on the basis of

– Cell structure – Body organisation

– Reproduction – Mode of nutrition

– Phylogenetic analysis

5. Position of bacteria in the kingdom system of classification proposed by Linnaeus is

(1) Monera (2) Protista (3) Plantae (4) Animalia

Sol. Answer (3)

Two kingdom classification, proposed by Linnaeus kept bacteria in Plantae.

6. Who was the founder of five kingdom system of classification?

(1) C. Linnaeus (2) R.H. Whittaker (3) Aristotle (4) T.O. Diener

Sol. Answer (2)

R.H. Whittaker proposed five kingdom classification

7. According to five kingdom system, gymnosperms and angiosperms are grouped under the kingdom

(1) Monera (2) Protista (3) Fungi (4) Plantae

Sol. Answer (4)

Gymnosperm and Angiosperm – Kingdom-Plantae

8. Which organisms are not included in the five kingdom system of classification?

(1) Protozoans (2) Viruses (3) Lichens (4) Both (2) & (3)

Sol. Answer (4)

Viruses and Lichens are not included in the five kingdom system.

9. Who for the first time classified organisms on the basis of scientific approach?

(1) Aristotle (2) Linnaeus (3) Whittaker (4) Pasteur

Sol. Answer (1)

Aristotle first time classified organisms on the basis of scientific approach.

10. Aristotle classified animals in two groups on the basis of presence or absence of RBC. The group which does not have RBCs is

(1) Anaima (2) Enaima (3) Ovipera (4) Vivipera

Sol. Answer (1)

Group of animals which have RBCs – Enaima

Group of animals which do not have RBCs – Anaima

11. Heterotrophic, eukaryotic, multicellular organisms lacking a cell wall are included in the kingdom.

(1) Protista (2) Fungi (3) Plantae (4) Animalia

Sol. Answer (4)

Animalia includes heterotrophic, eukaryotic, multicellular organism lacking a cell wall

(Kingdom : Monera)

12. Match the following

Column-I (Group of bacteria)	**Column-II (Their shape)**
a. Coccus	(i) Rod-shaped
b. Bacillus	(ii) Spherical
c. Spirillum	(iii) Spiral
d. Vibrium	(iv) Comma-shaped

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

Sol. Answer (2)

Coccus – Spherical
Bacillus – Rod shaped
Spirillum – Spiral
Vibrium – Comma-shaped

13. During favourable conditions bacteria mainly reproduce by

(1) Budding (2) Fragmentation (3) Sporulation (4) Fission

Sol. Answer (4)

Reproduction in bacteria during favourable condition–fission (mainly)

14. Select the **correct** statement.

(1) Cholera, typhoid, tetanus are well-known diseases caused by viruses
(2) Dinoflagellates, euglenoids and slime moulds are placed under kingdom Monera
(3) Members of kingdom Protista are primarily aquatic
(4) Dinoflagellates are the chief 'producers' in the oceans

Sol. Answer (3)

Cholera, Typhoid, Tetanus – Bacterial diseases
Dinoflagellates, Euglenoids & Slimemoulds – Protista
Diatoms are the chief producers in the ocean.

15. Select the **incorrect** statement.

(1) *Nostoc* and *Anabaena* have heterocysts for nitrogen fixation
(2) Cyanobacteria often form blooms in polluted water bodies
(3) Heterotrophic bacteria are more abundant in nature
(4) The cell wall of *Mycoplasma* are made up of chitin

Sol. Answer (4)

The cell wall of *Mycoplasma* is absent.

16. Heterocysts present in *Anabaena* is specialised for

(1) Nitrogen fixation (2) Food storage (3) Fission (4) Sexual reproduction

Sol. Answer (1)

Heterocysts present in *Anabaena* is specialised for nitrogen fixation

17. Mark the odd one w.r.t. cell wall.

(1) Halophiles (2) Methanogens (3) Thermoacidophiles (4) Cyanobacteria

Sol. Answer (4)

Cell wall in *Archaebacteria* is pseudomurein while in eubacteria it is murein.

Halophiles
Methanogens
Thermoacidophiles } Archaebacteria

Cyanobacteria → Eubacteria

18. Primitive bacteria living in salty areas are called as

(1) Methanogens (2) Thermoacidophiles (3) Heliophytes (4) Halophiles

Sol. Answer (4)

Archaebacteria living in salty areas—Halophiles.

(Kingdom : Protista)

19. Select the non-protistan group.

(1) Slime moulds (2) Dinoflagellates (3) Phycomycetes (4) Chrysophytes

Sol. Answer (3)

Slime moulds
Dinoflagellates
Chrysophytes (diatom) → Protista

Phycomycetes → Fungi

20. Which of the following is **correct**?

(1) All slime moulds are haploid (2) Protozoans lack cell wall

(3) Dinoflagellates are non-motile (4) Pellicle is absent in *Euglena*

Sol. Answer (2)

Slime moulds are haploid and diploid

Dinoflagellates are motile

Pellicle is present in *Euglena*

21. Which is not a feature of dinoflagellates?

(1) They cause red tides

(2) Their cell wall has stiff cellulose plates on the outer surface

(3) They release toxins

(4) These are mostly fresh water and non-photosynthetic

Sol. Answer (4)

Features of dinoflagellates.

- Cell wall has stiff cellulose plates on the outer surface
- Release toxins
- Causes red tides
- Mostly marine and photosynthetic

22. _____ are saprophytic protists, whose body moves along decaying twigs and leaves engulfing organic material.

(1) Euglenoids (2) Dinoflagellates (3) Chrysophytes (4) Slime moulds

Sol. Answer (4)

Slime moulds saprophytic protists

23. Being photosynthetic, which organism in absence of sunlight behave like heterotrophs?

(1) Slime moulds (2) Euglenoids (3) Sporozoans (4) Ciliated protozoans

Sol. Answer (2)

In presence of light – Photosynthetic
In absence of light – Heterotrophic } Mixotrophic (Euglenoids)

24. Diatomaceous earth is formed due to which substance?

(1) Phosphorus (2) Calcium (3) Silicon (4) Copper

Sol. Answer (3)

Diatomaceous earth – Silicon

(Kingdom Fungi, Kingdom Plantae, Kingdom Animalia)

25. Which is the **incorrect** statement regarding fungi?

(1) Wheat rust causing agent is *Puccinia*

(2) *Penicillium* is a source of antibiotic

(3) The cell wall of fungi are composed of peptidoglycan

(4) Fungi prefer to grow in warm and humid places

Sol. Answer (3)

Cell wall of fungi are composed of Chitin and Polysaccharide

26. **Statement-1 :** Yeast is a multicellular fungus.

Statement-2 : *Penicillium* is an unicellular fungus.

Statement-3 : *Albugo* is a parasitic fungus on mustard.

(1) Only statement-1 and statement-2 are correct (2) All the above statements are incorrect

(3) Only statement-3 is correct (4) Both statement-1 and statement-3 are correct

Sol. Answer (3)

Yeast is a unicellular fungus.

Penicillium is a multicellular fungus.

Albugo is a parasitic fungus, causes white rust in crucifers.

27. Mark the **correct** statement.

(1) Phycomycetes include mushrooms, bracket fungi or puff balls

(2) The mycelium of basidiomycetes is branched and septate

(3) *Neurospora* is used extensively in biochemical and genetic work, it belongs to group basidiomycetes

(4) Morels and truffles are non-edible

Sol. Answer (2)

Basidiomycetes include mushrooms, bracket fungi or puff balls.

Neurospora belongs to group ascomycetes.

Morels and Truffles are edible.

28. With respect to fungal sexual cycle, choose the **correct** sequence of events.

(1) Karyogamy, plasmogamy and meiosis (2) Meiosis, plasmogamy and karyogamy

(3) Plasmogamy, karyogamy and meiosis (4) Meiosis, karyogamy and plasmogamy

Sol. Answer (3)

Sexual reproduction in fungi has three stages

(a) Plasmogamy : Fusion of protoplasm of male and female gametes.

(b) Karyogamy : Fusion of nucli = Diploid = Zygote

(c) Meiosis : Reductional division

29. Mark the odd one w.r.t. kingdom fungi.

(1) They reproduce asexually and sexually

(2) They show a great diversity in structure and habitat

(3) Most of fungi are saprophytic in their mode of nutrition

(4) They do not reproduce by zoospores

Sol. Answer (4)

Fungi

- Reproduce asexually and sexually
- Great diversity in structure and habitat
- Most of fungi are saprophytic.
- Lower fungi reproduces by zoospores

30. The sex organs are absent, but plasmogamy is brought about by fusion of two vegetative or somatic cells of different genotypes. It is the feature of

(1) Phycomycetes (2) Basidiomycetes (3) Ascomycetes (4) All of these

Sol. Answer (2)

Basidiomycetes

- Sex organs absent
- Fusion of two vegetative/somatic cells of different genotypes

31. The fungi form fruiting bodies in which _____ division occurs, leading to formation of _____ spores.

(1) Mitotic, diploid (2) Reduction, haploid (3) Mitotic, haploid (4) Reduction, diploid

Sol. Answer (2)

$$\underset{(n)}{\text{Fungi}} \xrightarrow{\text{Mitosis}} \underset{(n+n)}{\text{Reproductive body}} \xrightarrow{\text{Meiosis}} \text{Haploid spores}$$

Somatic cells (*n*) Somatic cells (*n* + *n*) Spores (*n*)

32. Vegetative reproduction by fragmentation is common in

(1) *Agaricus* (2) *Saccharomyces* (3) *Euglena* (4) *Gonyaulax*

Sol. Answer (1)

Vegetative reproduction by fragmentation is common in fungi.

33. Select the **incorrect** match.

	Class		**Member**
(1)	Phycomycetes	–	*Albugo*
(2)	Basidiomycetes	–	*Claviceps*
(3)	Ascomycetes	–	*Penicillium*
(4)	Deuteromycetes	–	*Trichoderma*

Sol. Answer (2)

Phycomycetes	–	*Albugo*
Basidiomycetes	–	*Agaricus*
Ascomycetes	–	*Penicillium*
Deuteromycetes	–	*Trichoderma*

34. Haploid sexual spore produced exogenously is

(1) Ascospore (2) Basidiospore (3) Oospore (4) Zygospore

Sol. Answer (2)

Exogenous haploid sexual spore – Basidiospore

Endogenous haploid sexual spore – Ascospores

35. Coenocytic mycelium is found in

(1) Deuteromycetes (2) Phycomycetes (3) Ascomycetes (4) All of these

Sol. Answer (2)

Coenocytic mycelium – Oomycetes and Zygomycetes

Septate mycelium – Deuteromycetes, Ascomycetes and Basidiomycetes

36. The members of which group are commonly known as sac fungi?

(1) Phycomycetes (2) Deuteromycetes (3) Basidiomycetes (4) Ascomycetes

Sol. Answer (4)

Sac fungi – Ascomycetes

Club fungi – Basidiomycetes

Imperfect fungi – Deuteromycetes

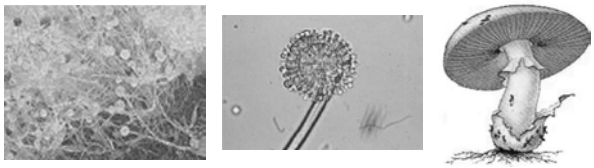
Or

Dustbin fungi

Algal fungi – Oomycetes

Conjugated fungi – Zygomycetes

37. Identify A, B and C in given diagram.



A B C

(1) A = *Mucor*, B = *Aspergillus*, C = *Agaricus*
(2) A = *Mucor*, B = *Agaricus*, C = *Aspergillus*
(3) A = *Agaricus*, B = *Mucor*, C = *Aspergillus*
(4) A = *Agaricus*, B = *Aspergillus*, C = *Mucor*

Sol. Answer (1)

Mucor – Zygomycetes
Aspergillus – Ascomycetes
Agaricus – Basidiomycetes

38. Which one is **correctly** matched?

(1) *Agaricus* - Smut
(2) *Ustilago* - Mushroom
(3) *Puccinia* - Insectivorous plant
(4) Deuteromycetes - Imperfect fungi

Sol. Answer (4)

Agaricus – Mushroom
Ustilago – Smut
Puccinia – Rust
Deuteromycetes – Imperfect fungi

39. Select the **incorrect** statement.

(1) *Cuscuta* is a parasitic plant
(2) Bladderwort and Venus fly trap are examples of insectivorous plants.
(3) Plantae includes algae, bryophytes, pteridophytes, gymnosperms and angiosperms
(4) The mode of nutrition in plants is holozoic

Sol. Answer (4)

Cuscuta (Amarbael) is parasitic plant

Bladderwort and Venus fly trap are insectivorous plants

Mode of nutrition in plants is autotrophic.

40. In which group of organisms, reserve food is stored in the form of glycogen and fat?

(1) Man and Monkey
(2) *Cuscuta* and Dog
(3) Bladderwort and *Cuscuta*
(4) Bladderwort and Venus fly trap

Sol. Answer (1)

Organism		**Stored food**
Man	–	Glycogen
Monkey	–	Fat

(Viruses, Viroids and Lichens)

41. Which of the following statement is **incorrect** about viruses?
    (1) Viruses contain either RNA or DNA
    (2) Viruses do not have their own metabolic system
    (3) Bacteriophages are usually double stranded DNA viruses
    (4) TMV contains both RNA and DNA as its genetic material

Sol. Answer (4)

TMV contains RNA as its genetic material

42. Viruses that infect the bacteria are termed as
    (1) Cyanophages (2) Bacteriophages
    (3) Mycophages (4) Both (1) & (2)

Sol. Answer (2)

Bacteriphages – Viruses that infect the bacteria

43. Who demonstrated that the extract of the infected plants of tobacco could cause infection in healthy plants?
    (1) Pasteur (2) M.W. Beijerinek
    (3) D.J. Ivanowsky (4) W.M. Stanley

Sol. Answer (2)

M.W. Beijerinek demonstrated that extract of the infected plants of tobacco could cause infection in healthy plants.

44. The protein coat called capsid made of small subunits called capsomeres are present in
    (1) Viruses (2) Bacteria
    (3) Fungi (4) Gymnosperms

Sol. Answer (1)

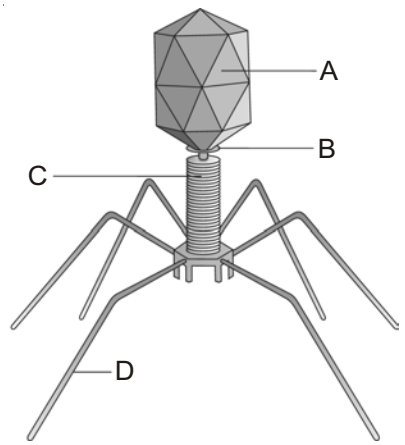
Viruses – Capsid made of small subunits, capsomeres

45. Select the incorrect match w.r.t. genetic material.
    (1) Herpes virus – ssDNA
    (2) Bacteriophage – dsDNA
    (3) TMV – ssRNA
    (4) Influenza virus – ssRNA

Sol. Answer (1)

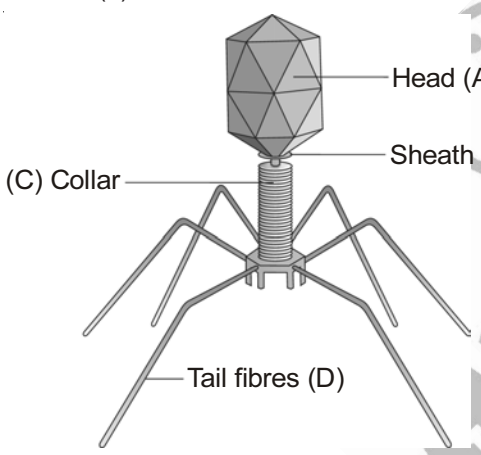
Herpes virus – dsDNA
Bacteriophage – dsDNA
TMV – ssRNA
Influenza virus – ssRNA

46. Identify A, B, C and D parts in this diagram of bacteriophage.



(1) A – Head, B – Sheath, C – Collar, D – Tail fibres
(2) A – Head, B – Collar, C – Sheath, D – Tail fibres
(3) A – Head, B – Collar, C – Tail fibres, D – Sheath
(4) A – Head, B – Sheath, C – Tail fibres, D – Collar

Sol. Answer (2)



47. Select the **correct** statement.
(1) Viroids have double stranded RNA
(2) RNA of viroids have high molecular weight than viruses
(3) Mumps and Herpes are viral diseases
(4) The name virus was given by D.J. Ivanowsky

Sol. Answer (3)
(i) Viroids–infectious RNA particles
(ii) RNA of viroids have low molecular weight.
(iii) Name virus was given by **Pasteur**

48. Lichens show symbiotic relationship between
(1) Algae and fungi
(2) Algae and bacteria
(3) Fungi and bacteriophage
(4) Algae and bacteriophage

Sol. Answer (1)
Lichen (Algae and fungi)

49. Which is **correct** w.r.t. lichens?
(1) Mycobiont is autotrophic component
(2) Phycobiont is heterotrophic component
(3) They are good pollution indicators
(4) They do not grow in non-polluted areas

Sol. Answer (3)

Lichens – Good pollution indicators

50. The association of fungi with the roots of higher plants is called
(1) Lichens (2) Mycorrhiza (3) Slime mould (4) *Neurospora*

Sol. Answer (2)

Mycorrhiza – Association of fungi with roots of higher plants

SECTION - B

Objective Type Questions

(Kingdom Systems of Classification)

1. Which kingdom was introduced in four kingdom classification and who proposed it ?
(1) Protista and Copeland
(2) Plantae and Linnaeus
(3) Monera and Whittaker
(4) Monera and Copeland

Sol. Answer (4)

Four Kingdom Classification

- Monera Kingdom was introduced
- Copeland introduced

2. Select **correct** match w.r.t. Whittaker' system of classification
(1) Monera : Unicellular, osmotrophs, producers and decomposers, true cellulosic cell wall
(2) Protista : Unicellular, eukaryotic, photoauto-trophs and chemoautotrophs
(3) Fungi : Multicellular/loose tissue, eukaryotic, osmotrophs, chitinous wall
(4) Animalia : Multicellular, eukaryotic, organ or organ system, holozoic, no saprobic

Sol. Answer (3)

Whittaker's system of classification

Fungi – Multicellular / loose tissue
Eukaryotic
Osmotrophs → Saprotrophs
Chitinous wall

3. Domain Eukarya includes how many kingdoms (w.r.t. six kingdom system)?
(1) 2 (2) 3 (3) 1 (4) 4

Sol. Answer (4)

Six kingdom classification

- Prokaryotes
  - Archaebacteria
  - Eubacteria
- Eukaryotes
  - Protista
  - Fungi
  - Plantae
  - Animalia

(Kingdom : Monera)

4. Bacteria are considered primitive organisms because they

(1) Possess incipient nucleus

(2) Are small, microscopic plants, which are not seen by the naked eyes

(3) Cause serious diseases to human being, domesticated animals and crop plants

(4) Produce endospores which are very resistant to adverse conditions

Sol. Answer (1)

Bacteria

- Primitive organisms
- Posses incipient nucleus

5. 70S ribosomes, chromatophores and circular DNA, are found in

(1) All eukaryotes (2) All prokaryotes

(3) Some prokaryotes (4) Some eukaryotes and some prokaryotes

Sol. Answer (3)

Some prokaryotes

- 70 S ribosomes
- Chromatophores
- Circular DNA

6. There is no alternation of generation in *Escherichia coli* because of the absence of

(1) Syngamy (2) Reduction division (3) Conjugation (4) Both (1) & (2)

Sol. Answer (4)

E.coli

- No alternation of generation
- No syngamy
- No reduction division

7. Branched chain lipids occur in the cell membranes of

(1) *Methanobacterium* (2) *Mycoplasma* (3) *Actinomycetes* (4) *Streptomyces*

Sol. Answer (1)

Branched chain lipids occur in the cell membrane of Archeaebacteria.

8. Cyanobacteria do not possess

(1) Gene recombinations (2) Flagella (3) Plasmids (4) Pigments

Sol. Answer (2)

Cynobacteria

- Flagella absent
- Gene recombinations
- Plasmids
- Pigments

] Present

9. Bacterial cell divides every one minute. It takes 15 minutes a cup to be one-fourth full. How much time will it take to fill the cup?

(1) 30 minutes (2) 45 minutes (3) 60 minutes (4) 17 minutes

Sol. Answer (4)

$\frac{1}{4}$ of cup = 15 minutes

$\frac{1}{2}$ of cup = 16 minutes

Cup of bacteria = 17 minutes

10. Highly resistance nature of endospore is due to the presence of

(1) Dipicolinic acid and peptidoglycan in spore coat (2) Peptidoglycan in exosporium

(3) Dipicolinic acid and Ca in cortex (4) Dipicolinic acid and Ca in cell membrane

Sol. Answer (3)

Highly resistance nature of endosperm is due to – dipicolinic acid and Ca in cortex.

11. Endospores formed by certain bacteria are actually the means for

(1) Reproduction (2) Perennation (3) Bioluminescence (4) Red snow formation

Sol. Answer (2)

Endospores formed by certain bacteria are actually means of perennation

12. Select an incorrect statement for F^+ bacteria

(1) It has F plasmid (2) Only somatic pili are present

(3) It is considered as donor bacterium (4) It cannot conjugate with another F^+ form

Sol. Answer (2)

F^+ bacteria

- Has F plasmid
- donor bacterium
- cannot conjugate with another F^+ form.
- both fertility and somatic pili are present.

(Kingdom : Protista)

13. Sea water glows during night mainly due to occurrence of

(1) *Gonyaulax* (2) *Noctiluca* (3) *Euglena* (4) *Cyclotella*

Sol. Answer (2)

Sea water glows during night *Noctiluca*

14. Rejuvenescent spore of diatom is

(1) Haploid and exospore (2) Diploid and statospore

(3) Haploid and statospore (4) Diploid and auxospore

Sol. Answer (4)

Rejuvenescent spore of diatom – Diploid and Auxospore

15. Leucosin (Chrysolaminarin) is a carbohydrate which is stored as reserve food in case of

(1) Diatom (2) *Euglena* (3) Dinoflagellates (4) *Paramoecium*

Sol. Answer (1)

Organism		**Reserve food**
Diatom	–	Leucosin (Chrysolaminarin)
Euglena	–	Paramylon
Dinoflagellates	–	Carbohydrate and oil
Paramecium	–	Glycogen granules

16. Flagellation in *Euglena* is

(1) Uniflagellation and stichonematic (2) Isokont and whiplash type

(3) Heterokont and whiplash type (4) Heterokont and stichonematic

Sol. Answer (4)

Flagellation in Englena

- Flagella two but different size (Heterokont)
- One side mastigoneus (Stichonematic)

17. Special type of red pigment present in the eye-spot of *Euglena* and Crustacea is called

(1) Phycoerythrin (2) Astaxanthin (3) Carotene (4) Xanthophyll

Sol. Answer (2)

Eye spot of *Euglena* and Crustacea

– Red pigment (Astaxanthin)

18. Paraflagellar body of *Euglena* helps in

(1) Locomotion (2) Photoreception (3) Reproduction (4) Osmoregulation

Sol. Answer (2)

Paraflagellar body of *Englena*

– Photosensitive (*Photoreception*)

19. The structure formed in the life cycle of cellular slime-mould due to chemotactic movement is

(1) Pseudoplasmodium (2) Swarm cells (3) Macrocyst (4) Capillitia

Sol. Answer (1)

Cellular slime mould

Somatic Phase (n) $\xrightarrow[\text{cAMP}]{\text{Aggregation}}$ Pseudoplasmodium (Primitive multicellular fungi or advanced protist)

$\Downarrow$

Chemotactic movement (Whole organism)

20. Myxamoeba are formed in the life cycle of

(1) *Physarum* (2) *Amoeba* (3) *Entamoeba* (4) Diatoms

Sol. Answer (1)

Acellular slime mould – Myxamoeba (eg. Physarum)

21. Difference between a red sea and red tide is

(1) Red tide takes place in red sea

(2) Associated with a cyanobacteria and protist respectively

(3) One is by virus and other by bacteria

(4) Associated with Rhodophyceae and diatoms respectively

Sol. Answer (2)

Red sea	**Red tide**
Cyanobacteria	Dinoflagellate
eg. *Trichodesmium erythrum*	eg. *Gonyaulax*, *Gymnodinium*

22. Consider the following statements and select correct set of features w.r.t. the life cycle of acellular slime moulds

a. Haploid vegetative stage as myxamoebae

b. Diploid vegetative stage as plasmodium

c. Capillitium

d. Photosynthetic protists

e. Sporic meiosis

f. Isogamous sexual reproduction

g. Anisogamous sexual reproduction with zygotic meiosis

(1) a, c, g (2) b, c, g (3) b, d, e, f (4) b, c, e, f

Sol. Answer (4)

Acellular slime mould ⇒

- diploid vegetative stage as plasmodium
- Capillitium ⇒ bears spores
- Sporic meiosis = Meiosis leads to spore formation.
- Isogamous sexual reproduction

(Kingdom : Fungi, Kingdom Plantae, Kingdom Animalia)

23. Find the correct match

Column I	**Column II**
a. Gill fungi	(i) Salmon disease
b. Cup fungi	(ii) Trama
c. Black mould	(iii) Penicillin
d. Blue / green mould	(iv) Zygophore
	(v) Apothecium

(1) a(ii), b(iii), c(i), d(v) (2) a(ii), b(v), c(iv), d(i)

(3) a(ii), b(v), c(iv), d(iii) (4) a(ii), b(iii), c(i), d(iv)

Sol. Answer (3)

Gill fungi – Trama (central part)

Cup fungi – Apothecium (*Peziza* & *Ascobolus*)

Black mould – Zygophore

Blue/Green mould – *Penicillin*

24. Select incorrectly matched pair

(1) *Mucor mucedo* - Coprophilous

(2) *Albugo candida* - Facultative parasite

(3) *Agaricus bisporus* - Edible basidiocarp

(4) *Puccinia graminis* - Black rust fungi

Sol. Answer (2)

Albugo candida – Obligate parasite

25. Fungi differs from bacteria in

(1) Mode of nutrition (2) Having NAG in cell wall

(3) Flagella structure (4) Reserve food material as glycogen

Sol. Answer (3)

Fungi differs from bacteria in flagella structure

26. Fruiting body in *Aspergillus* (or *Penicillium*) is known as

(1) Cleistothecium (2) Apothecium (3) Perithecium (4) Ascus

Sol. Answer (1)

Ascocarp in *Aspergillus* & *Pencillium* is cleistothecium

27. The famous Irish famine is related to a disease of potato known as

(1) Late blight of potato (2) Early blight of potato (3) Dry rot of potato (4) Potato scab

Sol. Answer (1)

Irish famine – Late blight of potato

28. A dolipore septum is a characteristic feature of

(1) Phycomycetes (2) Ascomycetes (3) Basidiomycetes (4) Zygomycetes

Sol. Answer (3)

Dolipore septum occurs in – Basidiomycetes

29. Which one of the following combination of characters is correct for the given fungal group?

(1) Algal fungi : Coenocytic, cellulosic wall, zoospore, zygospore, dikaryophase present

(2) Conjugating : Septate mycelium, chitinous cell wall, sporangiospore, shorter (n + n) phase

(3) Sac fungi : Septate mycelium, Ascogonium, Crozier stage, meiospores as ascospores, shorter dikaryophase

(4) Club fungi : Shorter primary mycelium stage, No sex organs, dominant dikaryophase, zygosporic meiosis

Sol. Answer (3)

Sac fungi

- Septate mycellium
- Ascogonium
- Crozier stage

30. Find set of edible basidiocarps.

(1) *Agaricus, Pleurotus* (2) *Agaricus, Morchella* (3) *Volvariella, Tuber* (4) *Amanita, Morchella*

Sol. Answer (1)

Basidiocarps
Agaricus
Pleurotus
Volvariella
} Edible

Ascocarp
Morchella
Tuber
} Edible

Amanita ⟶ Non-edible

(Viruses, Viroids and Lichens)

31. Read the statements carefully

a. Hartig net is the network of intracellular mycelium of *Boletus*

b. Ectomycorrhiza forms ten percent of total mycorrhiza

c. Fungal partner of endomycorrhiza belongs to zygomycetes or phycomycetes

(1) Only a & c are correct (2) Only b & c are correct (3) Only c is correct (4) All are correct

Sol. Answer (2)

Harting net is the network of intercellular mycorrhiza in *Boletus*, *Amnita* or mainly basidiomycetes.

32. Symptom not seen in plants due to viruses is

(1) Mosaic formation (2) Leaf rolling and curling (3) Yellowing, vein clearing (4) Root knot

Sol. Answer (4)

Viral symptoms in plants

- Mosaic formation
- Leaf rolling and curling
- Yellowing, vein clearing

33. Viruses possess all the following properties, *except*

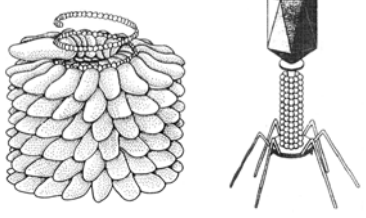
(1) They are non-cellular organisms (2) Possess both DNA and RNA

(3) Capsid protects nucleic acid (4) Have inert crystalline structure outside living cells

Sol. Answer (2)

Viruses posses either DNA or RNA.

34. Identify A and B given below:



A B

(1) A - DNA virus - Cauliflower mosaic virus
B - RNA virus - Pox virus

(2) A - RNAvirus - T.M.V
B - DNA virus - T_4 bacteriophage

(3) A - RNA virus - Hepatitis B virus
B - Reterovirus - T.M.V

(4) A - Reterovirus - Hepatitis B virus
B - RNA virus - T_4 bacterophage

Sol. Answer (2)

TMV — RNA Virus

T_4 bacteriaphage – DNA virus

35. Read the following statements carefully and identify **correct** statements w.r.t. Lichens
    a. The association cannot tolerate air pollution, especially due to sulphur dioxide
    b. Lichens are annuals and their growth is slow
    c. The fungal partner mostly belongs to ascomycetes.
    d. Soredia are most efficient means of asexual reproduction
    e. Orchids seldom occur without this association
    f. Foliose lichens are pioneers of succession in a water body.
    (1) c, d, f (2) a, c, d, f (3) a, b, e (4) a, c, d

Sol. Answer (4)

Lichens are perennial and their growth is slow.

SECTION - C

Previous Years Questions

1. Viroids differ from viruses in having : **[NEET-2017]**
    (1) DNA molecules with protein coat (2) DNA molecules without protein coat
    (3) RNA molecules with protein coat (4) RNA molecules without protein coat

Sol. Answer (4)

Viroids are sub-viral agents as infectious RNA particles, without protein coat.

2. Which of the following are found in extreme saline conditions? **[NEET-2017]**
    (1) Archaebacteria (2) Eubacteria (3) Cyanobacteria (4) Mycobacteria

Sol. Answer (1)

Archaebacteria are able to survive in harsh conditions because of branched lipid chain in cell membrane which reduces fluidity of cell membrane.

Halophiles are exclusively found in saline habitats.

3. Which among the following are the smallest living cells, known without a definite cell wall, pathogenic to plants as well as animals and can survive without oxygen? **[NEET-2017]**
    (1) *Bacillus* (2) *Pseudomonas* (3) Mycoplasma (4) *Nostoc*

Sol. Answer (3)

Mycoplasmas are smallest, wall-less prokaryotes, pleomorphic in nature. These are pathogenic on both plants and animals.

4. Which one of the following is **wrong** for fungi? **[NEET (Phase-2) 2016]**
    (1) They are eukaryotic (2) All fungi possess a purely cellulosic cell wall
    (3) They are heterotrophic (4) They are both unicellular and multicellular

Sol. Answer (2)

Cell wall of fungi is made up of chitin and polysaccharides.

5. Methanogens belong to **[NEET (Phase-2) 2016]**
    (1) Eubacteria (2) Archaebacteria (3) Dinoflagellates (4) Slime moulds

Sol. Answer (2)

Methanogens, halophiles and thermoacidophiles are archaebacteria.

6. Select the **wrong** statement. **[NEET (Phase-2) 2016]**
    (1) The walls of diatoms are easily destructible
    (2) 'Diatomaceous earth' is formed by the cell walls of diatoms
    (3) Diatoms are chief producers in the oceans
    (4) Diatoms are microscopic and float passively in water

Sol. Answer (1)

The cell walls of diatoms are embedded with silica and thus the walls are indestructible.

7. Select the **wrong** statement **[NEET (Phase-2) 2016]**

(1) Bacterial cell wall is made up of peptidoglycan

(2) Pili and fimbriae are mainly involved in motility of bacterial cells

(3) Cyanobacteria lack flagellated cells

(4) *Mycoplasma* is a wall-less microorganism

Sol. Answer (2)

Pili and fimbriae are surface structures of the bacteria that do not play a role in motility.

8. Which one of the following statements is **wrong**? **[NEET-2016]**

(1) Phycomycetes are also called algal fungi (2) Cyanobacteria are also called blue-green algae

(3) Golden algae are also called desmids (4) Eubacteria are also called false bacteria

Sol. Answer (4)

Eubacteria are true bacteria.

9. Chrysophytes, Euglenoids, Dinoflagellates and Slime moulds are included in the kingdom **[NEET-2016]**

(1) Animalia (2) Monera (3) Protista (4) Fungi

Sol. Answer (3)

All single celled eukaryotes like chrysophytes [diatoms and desmids], Euglenoids [*Euglena*], Dinoflagellates and slime moulds are included in kingdom -Protista.

10. One of the major components of cell wall of most fungi is **[NEET-2016]**

(1) Hemicellulose (2) Chitin (3) Peptidoglycan (4) Cellulose

Sol. Answer (2)

Cell wall of most fungi is made up of chitin.

11. The primitive prokaryotes responsible for the production of biogas from the dung of ruminant animals, include the **[NEET-2016]**

(1) Eubacteria (2) Halophiles (3) Thermoacidophiles (4) Methanogens

Sol. Answer (4)

Methanogens are obligate anaerobic ancient and primitive bacteria. They are involved in methanogenesis.

12. Which of the following statements is **wrong** for viroids? **[NEET-2016]**

(1) Their RNA is of high molecular weight (2) They lack a protein coat

(3) They are smaller than viruses (4) They causes infections

Sol. Answer (1)

Viroids have RNA of low molecular weight.

13. Choose the **wrong** statement **[Re-AIPMT-2015]**

(1) Yeast is unicellular and useful in fermentation

(2) *Penicillium* is multicellular and produces antibiotics

(3) *Neurospora* is used in the study of biochemical genetics

(4) Morels and truffles are poisonous mushrooms

Sol. Answer (4)

Morels and truffles are edible fungi belong to class ascomycetes.

14. In which group of organisms the cell walls form two thin overlapping shells which fit together? **[Re-AIPMT-2015]**

(1) Slime moulds (2) Chrysophytes (3) Euglenoids (4) Dinoflagellates

Sol. Answer (2)

Chrysophytes are photosynthetic protists. They have overlapping cell wall like soap box.

15. Choose the **wrong** statement **[Re-AIPMT-2015]**

(1) Mosaic disease in tobacco and AIDS in human being are caused by viruses

(2) The viroids were discovered by D.I. Ivanowski

(3) W.M. Stanley showed that viruses could be crystallized

(4) The term *Contagium vivum fluidum* was coined by M.W. Beijerinek

Sol. Answer (2)

The viroids were discovered by T.O. Diener.

16. The imperfect fungi which are decomposers of litter and help in mineral cycling belong to: **[Re-AIPMT-2015]**

(1) Ascomycetes (2) Deuteromycetes (3) Basidiomycetes (4) Phycomycetes

Sol. Answer (2)

Deuteromycetes - Imperfect fungi which are decomposers of litter and help in mineral cycling.

17. Pick up the **wrong** statement **[Re-AIPMT-2015]**

(1) Nuclear membrane is present in Monera

(2) Cell wall is absent in Animalia

(3) Protista have photosynthetic and heterotrophic modes of nutrition

(4) Some fungi are edible

Sol. Answer (1)

The members of kingdom-Monera are prokaryotes they lack nuclear membrane.

18. Which one of the following matches is correct? **[AIPMT-2015]**

(1)	*Agaricus*	Parasitic fungus	Basidiomycetes
(2)	*Phyto-phthora*	Aseptate mycelium	Basidiomycetes
(3)	*Alternaria*	Sexual reproduction absent	Deuteromycetes
(4)	*Mucor*	Reproduction by conjugation	Ascomycetes

Sol. Answer (3)

19. The guts of cow and buffalo possess **[AIPMT-2015]**

(1) Cyanobacteria (2) *Fucus* spp. (3) *Chlorella* spp. (4) Methanogens

Sol. Answer (4)

20. Five kingdom system of classification suggested by R.H. Whittaker is not based on **[AIPMT-2014]**

(1) Presence or absence of a well defined nucleus (2) Mode of reproduction

(3) Mode of nutrition (4) Complexity of body organisation

Sol. Answer (2)

Five kingdom system was not based on presence or absence of a well-defined nucleus

21. Archaebacteria differ from eubacteria in **[AIPMT-2014]**

(1) Cell membrane structure (2) Mode of nutrition

(3) Cell shape (4) Mode of reproduction

Sol. Answer (1)

Archaebacteria differ from eubacteria in cell membrane structure.

22. Which of the following shows coiled RNA strand and capsomeres? **[AIPMT-2014]**

(1) Polio virus (2) Tobacco mosaic virus (3) Measles virus (4) Retrovirus

Sol. Answer (2)

TMV – Coiled RNA strand and capsomeres

23. Viruses have **[AIPMT-2014]**

(1) DNA enclosed in a protein coat (2) Prokaryotic nucleus

(3) Single chromosome (4) Both DNA and RNA

Sol. Answer (1)

Viruses – DNA enclosed in a protein coat

24. The motile bacteria are able to move by: **[AIPMT-2014]**

(1) Fimbriae (2) Flagella (3) Cilia (4) Pili

Sol. Answer (2)

25. Pigment-containing membranous extensions in some cyanobacteria are **[NEET-2013]**

(1) Basal bodies (2) Pneumatophores (3) Chromatophores (4) Heterocysts

Sol. Answer (3)

Chromatophores :

– Cynaobacteria

– Pigment-containing membranous extensions

26. Which statement is wrong for viruses? **[AIPMT (Prelims)-2012]**

(1) They have ability to synthesize nucleic acids and proteins

(2) Antibiotics have no effect on them

(3) All are parasites

(4) All of them have helical symmetry

Sol. Answer (4)

All viruses do not have helical symmetry

27. The cyanobacteria are also referred to as **[AIPMT (Prelims)-2012]**

(1) Slime moulds (2) Blue green algae (3) Protists (4) Golden algae

Sol. Answer (2)

Cynobacteria = Blue green algae

28. Which one single organism or the pair of organisms is correctly assigned to its or their named taxonomic group? **[AIPMT (Prelims)-2012]**

(1) Yeast used in making bread and beer is a fungus

(2) *Nostoc* and *Anabaena* are examples of protista

(3) *Paramecium* and *Plasmodium* belong to the same kingdom as that of *Penicillum*

(4) Lichen is a composite organism formed from the symbiotic association of an algae and a protozoan

Sol. Answer (1)

Correct statement

29. How many organisms in the list given below are autotrophs?

Lactobacillus, Nostoc, Chara, Nitrosomonas, Nitrobacter, Streptomyces, Saccharomyces, Trypanosoma, Porphyra, Wolfia **[AIPMT (Mains)-2012]**

(1) Four (2) Five (3) Six (4) Three

Sol. Answer (3)

Autotrophs – *Nostoc*, *Chara*, *Nitrosomonas*, *Nitrobacter*, *Porphyra* & *Wolffia*

30. In the five-kingdom classification, *Chlamydomonas* and *Chlorella* have been included in **[AIPMT (Mains)-2012]**

(1) Protista (2) Algae (3) Plantae (4) Monera

Sol. Answer (1)

Chlamydomonas & *Chlorella* – *Protista*

31. Which one of the following organisms is not an example of eukaryotic cells? **[AIPMT (Prelims)-2011]**

(1) *Amoeba proteus* (2) *Paramecium caudatum*

(3) *Escherichia coli* (4) *Euglena viridis*

Sol. Answer (3)

32. Membrane-bound organelles are absent in **[AIPMT (Prelims)-2010]**

(1) *Plasmodium* (2) *Saccharomyces* (3) *Streptococcus* (4) *Chlamydomonas*

Sol. Answer (3)

Membrane-bound organelles are absent in Prokaryotes.

33. Single-celled eukaryotes are included in **[AIPMT (Prelims)-2010]**

(1) Monera (2) Protista (3) Fungi (4) Archaea

Sol. Answer (2)

Protista – Single celled eukaryotes

34. Virus envelope is known as **[AIPMT (Prelims)-2010]**

(1) Core (2) Capsid (3) Virion (4) Nucleoprotein

Sol. Answer (2)

35. Algae have cell wall made up of **[AIPMT (Prelims)-2010]**

(1) Cellulose, hemicellulose and pectins (2) Cellulose, galactans and mannans

(3) Hemicellulose, pectins and proteins (4) Pectins, cellulose and proteins

Sol. Answer (2)

36. Some hyperthermophilic organisms that grow in highly acidic (pH = 2) habitats belong to the two groups **[AIPMT (Prelims)-2010]**

(1) Liverworts and yeasts (2) Eubacteria and archaea

(3) Cyanobacteria and diatoms (4) Protists and mosses

Sol. Answer (2)

Eubacteria and Archaea

– Hyperthermophilic

– Can grow in highly acidic pH.

37. Infectious proteins are present in **[AIPMT (Prelims)-2010]**

(1) Satellite viruses (2) Gemini viruses (3) Prions (4) Viroids

Sol. Answer (3)

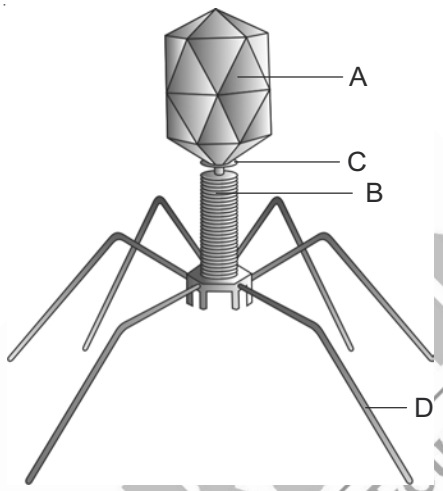
38. Black (stem) rust of wheat is caused by : **[AIPMT (Mains)-2010]**

(1) *Alternaria solani* (2) *Ustilago nuda*

(3) *Puccinia graminis* (4) *Xanthomonas oryzae*

Sol. Answer (3)

39. Given below is the diagram of a bacteriophage. In which one of the options all the four parts A, B,C and D are correct?



Options :

	A	B	C	D
(1)	Tail fibres	Head	Sheath	Collar
(2)	Sheath	Collar	Head	Tail fibres
(3)	Head	Sheath	Collar	Tail fibres
(4)	Collar	Tail fibres	Head	Sheath

Sol. Answer (3)

Bacteriophage has Head, Sheath, Collar, Tail fibres

40. Select the correct combination of the statements (a-d) regarding the characteristics of certain organisms

(a) Methanogens are Archaebacteria which produce methane in marshy areas.

(b) *Nostoc* is a filamentous blue-green alga which fixes atmospheric nitrogen.

(c) Chemosynthetic autotrophic bacteria synthesize cellulose from glucose.

(d) Mycoplasma lack a cell wall and can survive without oxygen.

The correct statement are **[AIPMT (Mains)-2010]**

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

Sol. Answer (4)

Chemosynthetic autotrophic bacteria synthesize glucose from CO_2.

41. T.O. Diener discovered a **[AIPMT (Prelims-2009) & (Mains-2010)]**

(1) Free infectious DNA (2) Infectious protein (3) Bacteriophage (4) Free infectious RNA

Sol. Answer (4)

Free infectious RNA (Viroids) – T.O. Diener

42. Which one is the wrong pairing for the disease and its causal organism? **[AIPMT (Prelims)-2009]**

(1) Black rust of wheat – *Puccinia graminis*

(2) Loose smut of wheat – *Ustilago nuda*

(3) Root-knot of vegetables – *Meloidogyne*

(4) Late blight of potato – *Alternaria solani*

Sol. Answer (4)

43. Which of the following is a symbiotic nitrogen fixer? **[AIPMT (Prelims)-2009]**

(1) *Azotobacter* (2) *Frankia* (3) *Azolla* (4) *Glomus*

Sol. Answer (2)

44. *Thermococcus,Methanococcus* and *Methano--bacterium* exemplify **[AIPMT (Prelims)-2008]**

(1) Bacteria that contain a cytoskeleton and ribosomes

(2) Archaebacteria that contain protein homologous to eukaryotic core histones

(3) Archaebacteria that lack any histones resembling those found in eukaryotes but whose DNA is negatively supercoiled

(4) Bacteria whose DNA is relaxed or positively supercoiled but which have a cytoskeleton as well as mitochondria

Sol. Answer (3)

Thermococcus, *Methanococcus* and *Methanobacterium* – Archaebacteria

45. Cellulose is the major component of cell walls of **[AIPMT (Prelims)-2008]**

(1) *Saccharomyces* (2) *Pythium* (3) *Xanthomonas* (4) *Pseudomonas*

Sol. Answer (2)

Pythium is oomycetes and having cellulosic cell wall.

46. In the light of recent classification of living organisms into three domains of life (bacteria, archaea and eukarya), which one of the following statements is true about archaea? **[AIPMT (Prelims)-2008]**

(1) Archaea completely differ from prokaryotes

(2) Archaea resemble eukarya in all respects

(3) Archaea have some novel features that are absent in other prokaryotes and eukaryotes

(4) Archaea completely differ from both prokaryotes and eukaryotes

Sol. Answer (3)

Archaebacteria have some novel features that are absent in other prokaryotes and eukaryotes.

47. Bacterial leaf blight of rice is caused by a species of **[AIPMT (Prelims)-2008]**

(1) *Erwinia* (2) *Xanthomonas* (3) *Pseudomonas* (4) *Alternaria*

Sol. Answer (2)

48. Biological organisation starts with: **[AIPMT (Prelims)-2007]**

(1) Atomic level (2) Submicroscopic molecular level

(3) Cellular level (4) Organismic level

Sol. Answer (2)

49. Which one of the following is a slime mould? **[AIPMT (Prelims)-2007]**

(1) *Anabaena* (2) *Rhizopus* (3) *Physarum* (4) *Thiobacillus*

Sol. Answer (3)

Physarum – Slime mould

50. Which one of the following statements about *Mycoplasma* is wrong? **[AIPMT (Prelims)-2007]**

(1) They cause disease in plants (2) They are also called PPLO

(3) They are pleomorphic (4) They are sensitive to penicillin

Sol. Answer (4)

Mycoplasma is insensitive to penicillin

51. Which pair of the following belongs to Basidiomycetes? **[AIPMT (Prelims)-2007]**

(1) *Morchella* and Mushrooms (2) Birds' nest fungi and Puffballs

(3) Puffballs and *Claviceps* (4) *Peziza* and Stink horns

Sol. Answer (2)

Basidiomycetes	**Ascomycetes**
Puffballs	*Claviceps*
Stink horns	*Peziza*
Mushrooms	*Morchella*
Birds nest fungi (*Cyathus*)	

52. Ergot of rye is caused by a species of **[AIPMT (Prelims)-2007]**

(1) *Claviceps* (2) *Phytophthora* (3) *Uncinula* (4) *Ustilago*

Sol. Answer (1)

Ergot of rye – *Clavicep purperia*

53. The thalloid body of a slime mould (Myxomycetes) is known as **[AIPMT (Prelims)-2006]**

(1) Protonema (2) Plasmodium (3) Fruiting body (4) Mycelium

Sol. Answer (2)

Plasmodium

- Thalloid body of slime mould
- Myxomycetes

54. The bacterium (*Clostridium botulinum*) that causes botulism is **[AIPMT (Prelims)-2006]**

(1) A facultative anaerobe (2) An obligate anaerobe

(3) A facultative aerobe (4) An obligate aerobe

Sol. Answer (2)

Clostridium botulinum is an obligate anaerobe.

55. Which of the following environmental conditions are essential for optimum growth of *Mucor* on a piece of bread ?

A. Temperature of about 25°C

B. Temperature of about 5°C

C. Relative humidity of about 5%

D. Relative humidity of about 95%

E. A shady place

F. A brightly illuminated place

Choose the answer from the following options : **[AIPMT (Prelims)-2006]**

(1) A, C and E only (2) A, D and E only (3) B, D and E only (4) B, C and F only

Sol. Answer (2)

Essential environmental conditions for *Mucor*.

- 25°C
- Relative humidity – 95 %
- Shady place

56. Curing of tea leaves is brought about by the activity of: **[AIPMT (Prelims)-2006]**

(1) Bacteria (2) Mycorrhiza (3) Viruses (4) Fungi

Sol. Answer (1)

To improve the flavour and taste in tea by bacteria called curing of tea leaves.

57. What is common about *Trypanosoma*, *Noctiluca*, *Monocystis* and *Giardia* ? **[AIPMT (Prelims)-2006]**

(1) These are all unicellular protists (2) They have flagella

(3) They produce spores (4) These are all parasites

Sol. Answer (1)

58. Barophilic prokaryotes **[AIPMT (Prelims)-2005]**

(1) Grow slowly in highly alkaline frozen lakes at high altitudes

(2) Occur in water containing high concentrations of barium hydroxide

(3) Grow and multiply in very deep marine sediments

(4) Readily grown and divides in sea water enriched in any soluble salt of barium

Sol. Answer (3)

Barophilic prokaryotes grow and multiply in very deep marine sediments.

59. Auxospores and hormocysts are formed, respectively, by **[AIPMT (Prelims)-2005]**

(1) Several diatoms and a few cyanobacteria (2) Several cyanobacteria and several diatoms

(3) Some diatoms and several cyanobacteria (4) Some cyanobacteria and many diatoms

Sol. Answer (1)

Auxospores – Diatoms

Hormocysts – Cyanobacteria

60. All of the following statements concerning the actinomycetous filamentous soil bacterium *Frankia* are correct except that *Frankia* : **[AIPMT (Prelims)-2005]**

(1) Can induce root nodules on many plant species

(2) Can fix nitrogen in the free-living state

(3) Like *Rhizobium*, it usually infects its host plant through root hair deformation and stimulates cell proliferation in the host's cortex

(4) Forms specialized vesicles in which the nitrogenase is protected from oxygen by a chemical barrier involving triterpene hopanoids

Sol. Answer (2)

Frankia is free living bacteria but can fix nitrogen in free living as well as symbiotic state.

61. Which of the following unicellular organism has a macronucleus for trophic function and one or more micronuclei for reproduction? **[AIPMT (Prelims)-2005]**

(1) *Euglena* (2) *Amoeba* (3) *Paramoecium* (4) *Trypanosoma*

Sol. Answer (3)

62. For retting of jute the fermenting microbe used is: **[AIPMT (Prelims)-2005]**

(1) *Helicobacter pylori* (2) *Methophilic* bacteria

(3) *Streptococcus lactin* (4) Butyric acid bacteria

Sol. Answer (4)

Retting of jute – Butyric acid bacteria

63. In the five kingdom system of classification, which single kingdom out of the following can include blue-green algae, nitrogen fixing bacteria and methanogenic archaebacteria?

(1) Plantae (2) Protista (3) Monera (4) Fungi

Sol. Answer (3)

Cyanobacteria, Nitrogen-fixing bacteria and Archaebacteria–Monera

64. In five kingdom system, the main basis of classification is

(1) Structure of nucleus (2) Mode of nutrition

(3) Structure of cell wall (4) Asexual reproduction

Sol. Answer (2)

Main basis of five-kingdom system is – mode of nutrition.

65. In which kingdom would you classify the archaea and nitrogen-fixing organisms, if the five-kingdom system of classification is used ?

(1) Plantae (2) Fungi (3) Protista (4) Monera

Sol. Answer (4)

Archaebacteria and Nitrogen-fixing bacteria–Monera.

66. Maximum nutritional diversity is found in the group

(1) Monera (2) Plantae (3) Fungi (4) Animalia

Sol. Answer (1)

Maximum nutritional diversity–Monera.

67. Specialized cells for fixing atmospheric nitrogen in *Nostoc* are

(1) Akinetes (2) Heterocysts (3) Hormogonia (4) Nodules

Sol. Answer (2)

Heterocystes – Specialised cells for Nitrogen-fixation in *Nostoc*.

68. Nuclear membrane is absent in

(1) *Volvox* (2) *Nostoc* (3) *Penicillium* (4) *Agaricus*

Sol. Answer (2)

Nostoc – Prokaryotes (Nuclear membrane absent)

69. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorised as

(1) Chemosynthetic autotrophs (2) Heterotrophic bacteria

(3) Cyanobacteria (4) Archaebacteria

Sol. Answer (2)

Heterotrophic bacteria

– Making curd and antibiotics

70. Organisms called Methanogens are most abundant in a

(1) Hot spring (2) Sulphur rock (3) Cattle yard (4) Polluted stream

Sol. Answer (3)

Cattle yard – Methanogens are most abundant

71. Which of the followings is mainly produced by the activity of anaerobic bacteria on sewage?

(1) Marsh gas (2) Laughing gas (3) Propane (4) Mustard gas

Sol. Answer (1)

Marsh gas is mainly produced by the activity of anaerobic bacteria on sewage.

72. A peculiar odour that prevails in marshy areas and cow-sheds is on account of a gas produced by

(1) Mycoplasma (2) Archaebacteria (3) Slime moulds (4) Cyanobacteria

Sol. Answer (2)

Methane is produced by *Methanogens*.

73. Organisms, which fix atmospheric nitrogen in the soil, fall under the category of

(1) Bacteria (2) Green algae (3) Soil fungi (4) Mosses

Sol. Answer (1)

Nitrogen-fixing organisms are bacteria.

74. Transduction in bacteria is mediated by

(1) Plasmid vector (2) Phage vector (3) Cosmid (4) F-factor

Sol. Answer (2)

Transduction in bacteria is mediated by virus. (Phage vector)

75. Many blue-green algae occur in thermal springs (hot water springs). The temperature tolerance of these algae have been attributed to their

(1) Mitochondrial structure (2) Importance of homopolar bonds in their proteins

(3) Cell wall structure (4) Modern cell organization

Sol. Answer (2)

Temperature tolerance of BGA is due to homopolymer bonds in their protein.

76. For the first time, the bacteria were observed by

(1) Robert Koch (2) A.V. Leeuwenhoek (3) W.H. Stanley (4) Louis Pasteur

Sol. Answer (2)

A.V. Leeuwenhoek, first time observed the bacteria.

77. A large number of organic compounds can be decomposed by

(1) Photoheterotorphs (2) *Pseudomonas* (3) Photolithotrophs (4) Chemoheterotrophs

Sol. Answer (2)

Pseudomonas decomposes a large number of organic compounds.

78. What are the sex organs provided in some bacteria?

(1) Sex pili (2) Plasmid (3) Circular DNA (4) Gametes

Sol. Answer (1)

Sex pilli are the sex organs in some bacteria.

79. BGA (blue green algae) are included in which of the following groups?

(1) Bryophytes (2) Prokaryotes (3) Protista (4) Fungi

Sol. Answer (2)

BGA, (cyanobacteria) belong to prokaryotes.

80. Which type of DNA is found in bacteria?

(1) Circular DNA (2) Membrane bound DNA

(3) Straight DNA (4) Helical DNA

Sol. Answer (1)

Bacterial DNA is circular DNA.

81. A few organisms are known to grow and multiply at temperatures of 100-105°C. They belong to

(1) Thermophilic sulphur bacteria (2) Hot spring blue-green algae

(3) Thermophilic subaerial fungi (4) Marine archaebacteria

Sol. Answer (2)

Bacteria grow and multiply at temperature of 100–105°C are hot spring blue-green algae.

82. The DNA of *E.coli* is

(1) Double stranded and linear (2) Double stranded and circular

(3) Single stranded and linear (4) Single stranded and circular

Sol. Answer (2)

DNA of *E.coli.* – Double stranded and circular

83. Photosynthetic bacteria have pigments in

(1) Chromoplasts (2) Chromatophores (3) Leucoplasts (4) Chloroplasts

Sol. Answer (2)

Photosynthetic bacteria have pigments in chromatophores

84. What is true for Archaebacteria?

(1) All are halophiles (2) All are photosynthetic (3) All are fossils (4) Oldest living beings

Sol. Answer (4)

Archaebacteria is oldest living beings.

85. What is true for cyanobacteria?

(1) Oxygenic with nitrogenase (2) Oxygenic without nitrogenase

(3) Non oxygenic with nitrogenase (4) Non oxygenic without nitrogenase

Sol. Answer (1)

Cynobacteria is oxygenic with nitrogenase (Nitrogen-fixation)

86. Organisms which obtain energy by the oxidation of reduced inorganic compounds are called

(1) Photoautotrophs (2) Chemoautotrophs (3) Saprozoic (4) Coproheterotrophs

Sol. Answer (2)

Chemoautotrophs – Energy source is from oxidation of reduced inorganic compounds.

87. Which statement is correct for bacterial transduction?

(1) Transfer of some genes from one bacteria to another bacteria through virus

(2) Transfer of genes from one bacteria to another bacteria by establishing contact

(3) Bacteria obtained its DNA directly from mother cell

(4) Bacteria obtained DNA from other external source

Sol. Answer (1)

Bacterial transduction – Transfer of some genes from one bacterium to another bacterium through virus.

88. Chromosomes in a bacterial cell can be 1 in number and

(1) Are always circular with more G ≡ C content

(2) Are always linear with more G ≡ C content

(3) Can be either circular or linear, but never both within the same cell

(4) Can be circular as well as linear within the same cell

Sol. Answer (1)

Bacteria

- Can be one chromosome
- Except *Mycoplasma* bacterial DNA is circular.

89. Viruses that infect bacteria and cause their lysis, are called

(1) Lysozymes (2) Lipolytic (3) Lytic (4) Lysogenic

Sol. Answer (3)

Bacteriophage causes lysis of bacteria – Lytic bacteriophage.

90. The most thoroughly studied bacteria plant interactions is the

(1) Cyanobacterial symbiosis with some aquatic ferns

(2) Gall formation on certain angiosperms by *Agrobacterium*

(3) Nodulation of *Sesbania* stems by nitrogen fixing bacteria

(4) Plant growth stimulation by phosphate-solubilising bacteria

Sol. Answer (2)

Gall formation on certain angiosperms by *Agrobacterium* is thoroughly studied.

91. What is true for photolithotrops?

(1) Obtain energy from radiations and hydrogen from organic compounds

(2) Obtain energy from radiations and hydrogen from inorganic compounds

(3) Obtain energy from organic compounds

(4) Obtain energy from inorganic compounds

Sol. Answer (2)

Photolithotrophs

Energy from – Radiations

Hydrogen from – Inorganic compounds

92. The protists have

(1) Only free nucleic acid aggregates

(2) Membrane bound nucleoproteins lying embedded in the cytoplasm

(3) Gene containing nucleoproteins condensed together in loose mass

(4) Nucleoprotein in direct contact with the rest of the cell substance

Sol. Answer (2)

Protists are eukaryotes and they have membrane-bound nucleoproteins in cytoplasm.

93. Which of the following organism possesses characteristics of a plant and an animal?

(1) *Euglena* (2) *Paramoecium* (3) Bacteria (4) *Mycoplasma*

Sol. Answer (1)

Euglena possesses characteristics of plant and animal.

94. Capillitium is present in the sporangium of

(1) *Dictyostelium* (2) *Polysphondylium* (3) *Physarum* (4) *Navicula*

Sol. Answer (3)

Capillitium Present in slime mould. eg., *Physarum*

95. Which one of the following is true for fungi?

(1) They are phagotrophs (2) They lack a rigid cell wall

(3) They are heterotrophs (4) They lack nuclear membrane

Sol. Answer (3)

Fungi are heterotrophic.

96. When there are two haploid nuclei per cell in some fungi before the formation of diploid, this stage is called

(1) Diplotene (2) Diplophase (3) Dikaryophase (4) Dikaryote

Sol. Answer (3)

Two haploid nuclei per cell in some fungi – Dikaryophase.

97. Which one of the following is linked to the discovery of Bordeaux mixture as a popular fungicide?

(1) Black rust of wheat (2) Bacterial leaf blight of rice

(3) Downy mildew of grapes (4) Loose smut of wheat

Sol. Answer (3)

Bordeaux mixture

– Fungicide

– Discovered by R.M.A. Millardet

– Control of Downy mildew

98. The black rust of wheat is a fungal disease caused by

(1) *Albugo candida* (2) *Puccinia graminis tritici*

(3) *Ustilago nuda* (4) *Cleviceps purpurea*

Sol. Answer (2)

Black rust of wheat	**White rust in crucifer**
• *Puccinia graminis tritici*	• *Albugo candida* or *Cystopus candidus*
– **Ergot of rye**	– **Loose smut**
• *Clavicep purpurea*	• *Ustilago nuda*

99. The smut of maize is caused by

(1) *Ustilago avenae* (2) *Ustilago nuda* (3) *Ustilago hordei* (4) *Ustilago maydis*

Sol. Answer (4)

Smut of maize – *Ustilago maydis*

100. *Puccinia* forms uredia and

(1) Telia on wheat leaves

(2) Aecia on barberry leaves

(3) Pycnia on barberry leaves

(4) Aecia on wheat leaves.

Sol. Answer (1)

Puccinia forms spores **Wheat Leaves** – Uredia & Telia (n + n)

Barberry leaves – Aecia & Pycnia

Soil – Basidiospore

101. Columella is a specialized structure found in the sporangium of

(1) *Spirogyra* (2) *Ulothrix* (3) *Rhizopus* (4) *Penicillium*

Sol. Answer (3)

Sporangiospore – Collumella present

e.g., *Rhizopus*

Mucor

Dung mould

102. Dikaryotisation occurs in *Puccinia* on

(1) Upper surface of Barberry leaf (2) Lower surface of Barberry leaf

(3) Upper surface of wheat leaf (4) Lower surface of wheat leaf

Sol. Answer (1)

Dikaryotisation in *Puccinia*

– Upper surface of Barbery leaf

103. Adhesive pad of fungi penetrate the host with the help of

(1) Mechanical pressure and enzymes (2) Hooks and suckers

(3) Softening by enzymes only (4) Only by mechanical pressure

Sol. Answer (1)

Adhesive pad of fungi penetrate in the host with the help of – Mechanical pressure and enzymes

104. Which fungal disease spreads by seed and flowers?

(1) Loose smut of wheat (2) Corn smut

(3) Covered smut of barley (4) Soft rot of potato

Sol. Answer (1)

Fungal disease spreads by seed and flowers – Loose smut of wheat.

105. Which of the following secrete toxins during storage conditions of crop plants?

(1) *Aspergillus* (2) *Penicillium* (3) *Fusarium* (4) *Colletotrichum*

Sol. Answer (1)

Aspergillus secretes toxins during storage conditions of crop plants.

106. Mycorrhiza exhibits the phenomenon of

(1) Parasitism (2) Symbiosis (3) Antagonism (4) Endemism

Sol. Answer (2)

Mycorrhiza – Symbiotic relation

107. Mycorrhiza is correctly described as

(1) Parasitic association between roots and some fungi

(2) Symbiotic relationship between fungi and roots of higher plants

(3) Symbiosis of algae and fungi

(4) Relation of ants with the stem of some trees

Sol. Answer (2)

Mycorrhiza – Fungi and roots of higher plants

108. VAM is an example of

(1) Endomycorrhiza (2) Ectoparasitism (3) Endoparasitism (4) Ectomycorrhiza

Sol. Answer (1)

VAM – Endomycorrhiza

e.g., Glomus

109. An example of endomycorrhiza is

(1) *Nostoc* (2) *Glomus* (3) *Agaricus* (4) *Rhizobium*

Sol. Answer (2)

Endomycorrhiza

e.g., Glomus $\rightarrow$ Orchids

110. Satellite RNAs are present in some

(1) Plant viruses (2) Viroids (3) Prions (4) Bacteriophages

Sol. Answer (1)

Satellite RNAs (Plant viruses)

111. A cell-coded protein that is formed in response to infection with most animal viruses, is called

(1) Histone (2) Antibody (3) Interferon (4) Antigen

Sol. Answer (3)

Interferon

– Cell-coded protein

– In response to infection with animal viruses

112. Tobacco mosaic virus *(*TMV*)* genes are associated with

(1) Single stranded RNA (2) Double stranded DNA

(3) Single stranded DNA (4) Double stranded RNA

Sol. Answer (1)

TMV – Single stranded RNA

113. The tailed bacteriophages are

(1) Motile on surface of bacteria (2) Non-motile

(3) Motile on surface of plant leaves (4) Actively motile in water

Sol. Answer (2)

The tailed bacteriophages – Non-motile

114. Viruses posses

(1) Ribosomes to synthesize protein (2) Organelles for its vital mechanisms

(3) Either DNA or RNA (4) None of these

Sol. Answer (3)

Viruses – Either RNA or DNA

115. Enzymes are generally not found in

(1) Fungi (2) Algae (3) Virus (4) Cyanobacteria

Sol. Answer (3)

Enzymes are generally absent in viruses.

116. Viruses are living, because they

(1) Multiply in host cells (2) Carry anaerobic respiration

(3) Carry metabolic activities (4) Cause infection

Sol. Answer (1)

Viruses are living because they multiply in host cells.

117. Viruses are no more “alive” than isolated chromosomes because

(1) They require both RNA and DNA

(2) They both need food molecules

(3) They both require oxygen for respiration

(4) Both require the environment of a cell to replicate

Sol. Answer (4)

Viruses and isolated chromosomes require the environment of a cell to replicate.

118. Tobacco mosaic virus is elongated rod like with size

(1) 300 × 10 nm (2) 300 × 5 nm (3) 300 × 18 nm (4) 700 × 30 nm

Sol. Answer (3)

TMV

- Elongated rod-like
- 300 × 18 nm size

119. Which one of the following statements about viruses is correct ?

(1) Viruses possess their own metabolic system
(2) All viruses contain both RNA and DNA
(3) Viruses are obligate parasites
(4) Nucleic acid of viruses is known as capsid

Sol. Answer (3)

Viruses – Obligate parasites

120. Which of the following statements is not true for retroviruses?

(1) DNA is not present at any stage in the life cycle of retroviruses
(2) Retroviruses carry gene for RNA-dependent DNA polymerase
(3) The genetic material in mature retroviruses is RNA
(4) Retroviruses are causative agents for certain kinds of cancer in man

Sol. Answer (1)

Reterovirus

$$RNA \xrightarrow{\text{Reverse transcriptase}} DNA$$

121. The causative agent of mad-cow disease is a

(1) Virus
(2) Bacterium
(3) Prion
(4) Worm

Sol. Answer (3)

Prion (= Proteins)

Mad cow disease
Kuru disease
Creutz Feldt Jakob disease
} Only in animals

122. Which one of the following statement about lichens is wrong?

(1) These grow very rapidly (2 cm per day)
(2) They show fungal and algal symbiotic relationships
(3) Some of its species are eaten by reindeers
(4) These are pollution indicators

Sol. Answer (1)

Lichens grow very slowly

123. Most of the lichens consist of

(1) Green algae and ascomycetes
(2) Brown algae and higher plant
(3) Blue green algae and basidiomycetes
(4) Red algae and ascomycetes

Sol. Answer (1)

Lichens –

Green algae + Ascomycetes
(Algae) (Fungi)

124. Which of the following is the use of lichens in case of pollution?

(1) They promote pollution (2) Lichens are not related with pollution

(3) They treat the polluted water (4) They act as bioindicators of pollution

Sol. Answer (4)

Lichens – Bioindicator of air pollution

125. Lichens are well known combination of an alga and a fungus where fungus has

(1) A saprophytic relationship with the alga (2) An epiphytic relations1hip with the alga

(3) A parasitic relationship with alga (4) A symbiotic relationship with alga

Sol. Answer (4)

Lichen – Symbiotic relation of fungi with algae

126. There exists a close association between the alga and the fungus within a lichen. The fungus

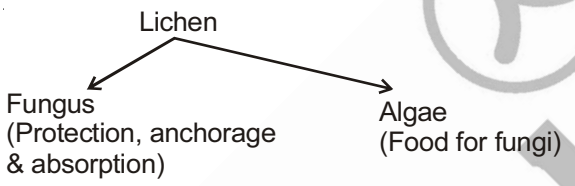
(1) Provides protection, anchorage and absorption for the algae

(2) Provides food for the alga

(3) Fixes the atmospheric nitrogen for the alga

(4) Releases oxygen for the alga

Sol. Answer (1)



127. What is the genetic material in Influenza virus?

(1) Double helical DNA (2) RNA (3) Single helix DNA (4) None of these

Sol. Answer (2)

Influenza virus – Genetric material – RNA

128. The sexual reproduction is absent in

(1) *Spirogyra* (2) *Nostoc* (3) *Ulothrix* (4) *Volvox*

Sol. Answer (2)

Sexual reproduction is absent in prokaryotes e.g., *Nostoc*

129. Which one of the following fungi contains hallucinogens?

(1) *Morchella esculenta* (2) *Amanita muscaria* (3) *Neurospora* sp. (4) *Ustilago* sp.

Sol. Answer (2)

Hallucinogen – *Amanita muscaria*

130. Anoxygenic photosynthesis is characteristic of

(1) *Rhodospirillum* (2) *Spirogyra* (3) *Chlamydomonas* (4) *Ulva*

Sol. Answer (1)

Anoxygenic phototrophs – *Rhodospirillum*

131. A location with luxuriant growth of lichens on the trees indicates that the

(1) Trees are very healthy (2) Trees are heavily infested

(3) Location is highly polluted (4) Location is not polluted

Sol. Answer (4)

Lichens

– Bioindicator of pollution

– Pollutant free environment (luxuriant growth of lichens on the trees)

SECTION - D

Assertion-Reason Type Questions

1. A : Slime moulds have the characters of both plants and animals.

R : Reproductive phase is animal like and vegetative phase is plant-like.

Sol. Answer (3)

Slime moulds

– Reproductive phase is plant-like (Cell wall present in spore)

– Vegetative phase is animal-like (Cell wall absent)

2. A : Methanogens can show symbiotic association with eukaryotic organisms.

R : They are used for the production of biogas.

Sol. Answer (2)

Both statements are correct but reason is not correct explanation.

3. A : Lichens do not grow in polluted area having SO_2.

R : Lichens secrete carbonic acid and oxalic acid on barren rocks.

Sol. Answer (2)

Both (A) & (R) are correct

4. A : Secondary mycelium of *Agaricus* is binucleated.

R : Secondary mycelium is formed by somatogamy of primary mycelium.

Sol. Answer (1)

5. A : Phycobiont is dominant parent in lichens.

R : Algal component in the dual organisms can be eukaryotic only.

Sol. Answer (4)

Mycobiont is dominant parent in lichens.

Fungi is eukaryote but algae can be prokaryote or eukaryote.

6. A : Unicellular eukaryotes are included in Monera.

R : Unicellular eukaryotes have 70S cytoribosomes.

Sol. Answer (4)

Unicellular eukaryotes are in protista.

7. A : Slime moulds form fruiting bodies under unfavourable conditions.
R : Naked plasmodium is formed during favourable conditions.

Sol. Answer (2)
Both (A) & (R) are correct

8. A : DNase can inhibit the process of transformation.
R : Transformation is absorption of DNA segment from the surrounding medium by a living bacterium.

Sol. Answer (2)
Both (A) & (R) are correct

9. A : MLOs are pleomorphic and non-motile monerans.
R : They are insensitive to antibiotics like penicillin.

Sol. Answer (2)
Both (A) & (R) are correct

10. A : Majority of bacteria are autotrophs.
R : Chemoheterotrophic nutrition is absent in bacteria.

Sol. Answer (4)
Majority of bacteria are heterotrophs.

11. A : Holophytic protistans are important phytoplanktons and they contribute 80% of the total photosynthesis.
R : They lack chemosynthetic nutrition and utilize non sulphur organic compound as the source of electron and proton in carbon assimilation.

Sol. Answer (3)
Holophytic protistans
– 80% of total photosynthesis
– Source of electron is H_2O

12. A : Sexual spores in pink mould are meiospores produced endogenously.
R : They develop flask shaped fruiting body in sexual life cycle.

Sol. Answer (2)

13. A : Azotodesmic lichens are biofertilisers enriching nitrogen contents in soil.
R : This ability is due to the presence of heterocystous blue-green algae as phycobiont component.

Sol. Answer (1)

14. A : Viroids are not included in five kingdom system.
R : They are non-cellular.

Sol. Answer (1)

15. A : Viruses which infect animals generally possess ssRNA or dsRNA or dsDNA.
R : Phytophagineae generally contain dsDNA.

Sol. Answer (3)
Phytophginae generally contain ssRNA.

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