UNIT 1:
1. Describe ultra structure of Bacterial Cell add a note on its Economic Importance.
2. Give general Characters of Bacteria with its economic importance.
3. Describe reproduction in Bacteria.
4. Explain in detail structure and reproduction in Usnea.
5. Describe in detail TMV and its multiplication.

UNIT 2:
1. Describe life cycle of Nostoc
2. Describe sexual reproduction in Chara
3. Describe life cycle of Botrydium
4. Describe life cycle of Sargassum.
5. Write in detail sexual reproduction in Batrchospermeum

UNIT 3:
1. Describe asexual and sexual method of reproduction in Albugo.
2. Describe in detail the process of reproduction in Mucor
3. Give an account of sexual and asexual reproduction in Eurotium.
4. Describe external and internal structure in Agaricus basidiocarp.
5. Give an account of thallus structure of Cercospora. Add a note on its reproduction.

Short Notes:
a) Economic importance of Bacteria  b) Mycoplasma  c) Lichens  d) Trichome
e) Globule  f) Nucule  g) Botrydium thallus  h) Economic importance of Fungi.
1. Viruses are__________
   A) Autotrophic. b) Heterotrophic. c) Cellular. d) Acellular *

2. More definite knowledge about chemical nature of viruses was provided by__________
   a) D.J. Iwanowski. b) M.W. Stanley *. c) Louis Pasteur. d) Melvin Calvin.

3. Viruses are essentially made up of__________

4. The organism capable of destroying bacterial colonies is__________
   a) Lysis. b) Virus*. c) Fungi. d) Tadpole.

5. For successful study of the morphology of viruses the microscope used is ____________
   a) Binocular. b) Polarizing c) Electron* d) Simple.

6. In cyanophage the genetic material is__________
   a) DNA*. b) RNA c) Both DNA & RNA d) Proteins.

7. Outside the host cell the viruses are simply non-living particles, known as__________
   a) Virion*. b) Proviruses c) Prophages d) Capsids.

8. Leaf curl of Papaya is caused by__________
   a) Bacteria. b) Virus* c) Fungi d) Algae.

9. Nucleic acid found in HIV is__________
   a) 2 DNA b) 1 DNA c) 2RNA d) 1 RNA*

10. In which of the following viruses may have naked capsid__________
    a) Polyhedral b) Helical c) Both a & b* d) Complex

11. Which of the following is absent in viruses__________
    a) Mitochondria* b) DNA c) RNA d) Protein.

12. In TMV each turn of the RNA helix contains about__________
    a) 29 Nucleotides b) 158 Nucleotides c) 49 Nucleotides* d) 23 Nucleotides.

13. The shape of T4 Bacteriophage is__________
    a) Tadpole shape* b) Spoon shaped c) Crescent Shaped d) Disc Shaped

14. TMV stands for__________
    a) Total Multiple Virus b) Tobacco Mosaic Virus* c) Tomato Mosaic Virus d) Tree Mosaic Virus.

15. The disease caused by virus is__________
    a) Malaria b) Influenza* c) Diptheria d) Typhoid.

16. TMV is__________
    a) Balloon shaped b) Egg Shaped c) Rod Shaped* d) Leaf like.

17. Basic structural unit of virus capable of infecting a specific host is called__________
    a) Bacteria b) Protein c) Lipids d) Virion*

18. Protein sub units of TMV are called as__________
    a) Capsomers* b) Viriods c) Fats d) Sugars

19. Length of TMV is__________
    a) 3000Å 0 b) 2000Å 0 c) 500Å 0 d) 1500Å 0.

20. Diameter of TMV is__________
    a) 200Å 0 b) 150Å 0 c) 600Å 0 d) 70Å 0.

ANSWER:*
1. Bacteria are considered to be plants because they have____________
   a) Have rigid cell wall* b) Can Not move c) Are present every where d) Can multiply by fission.
2. What is the general shape of Bacteria____________
   a) Rod*. b) Spheres. c) Spirals. d) Cubes.
3. Bacteria which are smallest in size are____________
   a) Vibrio b) Cocci* c) Spirilli d) Bacilli.
4. *Nostoc* species resemble as__________
   a) Mitochondria b) Chloroplast c) *Chlamydomonas* d) Bacteria*.
5. The structure formed by bacterial genome is generally called____________
   a) Nucleus b) Nucleosome c) Nucleolus d) Nucleoid*.
6. Circular DNA is seen in__________
   a) Blue green algae. b) Fungi c) Bacteria* d) Viruses
7. Cell wall of Bacteria is made of____________
   a) Cellulose. b) Lipids c) Starch d) Peptidoglycan*.
8. The cells of Cyanobacteria and Bacteria exhibit similarity in having similar________
   a) DNA* b) Plastids c) Nuclei d) Chromosomes.
9. Milk spoilage is due to____________
   a) *Aspergillus* b) *Pseudomonas* c) *Lactobacillus* d) Staphylococcus
10. Sexual reproduction in bacteria is called as__________
    a) Fusion b) Fragmentation c) Genetic Recombination* d) Meiosis.
11. Vegetative reproduction in bacteria takes place by__________
    a) Zoospores b) Conidia c) Aplanospores d) Binary Fission*.
12. Following is not the shape of Bacteria____________
    a) Spirillum b) Vibrio c) Sarcinae d) Square*.
13. Hans Gram is known for__________
    a) *Penicillium* b) Gram Staining* c) Chromatography d) Microscope.
14. The first to discover Bacteria__________
    a) A.V. Leeuwenhoek* b) R. Koch c) J. Lister d) L. Pasteur.
15. Antibiotics are mostly obtained from____________
    a) Bacteria* b) Viruses c) Angiosperms d) Fungi.
16. Plasmids are____________
    a) Viruses b) micro-organisms c) essential bacterial genetic element d) Extra Chromosomal DNA*.
17. Bacteria respiratory enzymes are present in__________
18. Which one of the following fixes CO2 into Carbohydrates__________
    a) *Rhizobium* b) *Nitrobacter* c) *Bacillus* d) *Rhodospirillum*.
19. Symbiotic bacteria which occur in the root of leguminous plants__________
    a) *Rhizobium* b) *Lactobacillus* c) *Escherichia* d) *Xanthomonas*.
20. Who discovered bacterial transformation__________
    a) Leeuwenhoek b) Griffith* c) Robert Hill d) Khorana.

*ANSWER:*
1. The smallest known prokaryotic organisms are_______________
   a) Mycoplasma* b) Viruses c) Bacteriophage d) Nostoc.
2. Pleuro- pneumonia like organisms are grouped under______________
   a) Prokaryotes* b) Eukaryotes c) Fungi d) Viruses.
3. Mycoplasma differ from viruses______________
   a) Infect plants only b) Have cell wall c) Possess both DNA & RNA* d) Lack Metabolic Organelles.
4. The outer most limiting layer of typical cell of mycoplasma is a______________
5. One of the diseases is caused by Mycoplasma in Plants.
   a) Red rot b) Leaf curl of Papaya c) Tikka disease d) Little leaf of Brinjal*.
6. Cryptogams includes__________
   a) Thallophytes b) Bryophytes c) Pteridophytes d) All of the above*.
7. Classification of cryptogam is based on______________
   a) D. I. Arnon. b) Bateson. c) Smith* d) Robert Koch
8. Lower cryptogams are___________
   a) Angiosperms. b) Bryophytes* c) Fungi d) Gymnosperms
9. Higher cryptogams are____________
   a) Pteridophytes* b) Viruses c) Angiosperms d) Bacteria.
10. The plants without flower and seeds are called as______________
    a) Phanerogams b) Consumers c) Cryptogams* d) Decomposers.
11. One of the following is a symbiotic association between algae and fungi______________
    a) Root Nodules b) Mycorrhiza c) Euglena d) Lichens*.
12. The algal component of Lichen is called as______________
    a) Green Algae b) Phycobiont* c) Mycobiont d) Endophyte.
13. The fungal component of lichen is called as____________
    a) Red algae b) Epiphyte c) Mycobiont* d) Phycobiont.
14. Lichenin found in thalli of lichen is____________
    a) Carbohydrates* b) Protein c) Lipid d) Alkaloid.
15. On the basis of external form lichens are of following type______________
    a) Crustose lichen b) Foliose Lichen c) Fruticose Lichen d) All of the above*.
16. Usnic acid is Obtained from______________
    a) Algae b) Bacteria c) Usnea* d) Fungi.
17. The fruiting body of lichens are________________
    a) Apothecia b) Perithecia c) Cleistothecium d) Both a & b*.
18. Usnea often grows on______________
    a) Sick or dying trees b) Water c) Soil d) walls.
19. Sexual reproduction is performed by______________
    a) Algal component b) Fungal Component* c) Both a & b d) none.
20. Usnea species have been used to create______________
    a) Caffeine b) Textile Dyes* c) Beverages d) Expectorant.

ANSWER:*
1. Study of Algae is called as___________
   a) Mycology b) Bryology c) Physiology d) Phycology*. 
2. Whose classification is followed to classify Algae___________
   a) Alexopolous b) F.E. Fritsch* c) G.M. Smith d) Bentham and Hooker
3. According to Fritsch Algae itself is______________
   a) Division* b) Kingdom c) Order d) Family.
4. F.E. Fritsch divided Algae in how many classes______________
   a) 10 b) 6 c) 11* d) 15.
5. Prokaryotic cell is found in class____________
   a) Cyanophyceae* b) Rhodophyceae c) Xanthophyceae d) Diatoms.
6. The mode of Nutrition in Algae is____________
   a) Heterotrophic b) Parasitic c) Absorptive d) Autotrophic*
7. Agar- Agar is obtained from______________
   a) Bacteria b) Algae c) Mushroom d) Bryophytes
8. Chlorophyceae includes__________
   a) Pink Algae b) Red Algae c) Green Algae* d) Brown Algae
9. Who is Father of Modern Indian Algology____________
   a) M.O.P Iyengar* b) P. Maheshwari c) K.C. Mehta d) S.R. Kashyap
10. Algae reproduces____________
    a) Vegetative b) Asexual c) Sexual d) All of the above*
11. The Cyanobacteria are________
    a) Eukaryotic b) Prokaryotic* c) a & b both d) None of the above.
12. In Cyanobacteria the nucleus is surrounded by____________
    a) Single layered Membrane b) Double Layered membrane c) No Membrane* d) Triple Membrane
13. The storage products in Blue Green Algae are____________
    a) Mannitol b) Cyanophycean starch and protein* c) Algin d) Agar-agar.
14. Flagellation is not found in______________
    a) Chlorophyceae b) Phaeophyceae c) Charyophyceae d) Cyanophyceae*
15. The heterocyst are not found in______________
    a) Oscillatoria* b) Nostoc c) Rivularia d) Gloeotrichia.
16. The tissue of Anthoceros contain____________
    a) Nostoc* b) Spirogyra c) Oscillatoria d) Lyngbya
17. Root of Cycas contain______________
    a) Nostoc b) Anabaena* c) Crocococcus d) Oscillatoria.
18. The filament of Nostoc is called as__________
    a) Flagella b) Pili c) Trichome* d) Hormogone
19. Nitrogen fixation in rice fields is carried by______________
    a) Nostoc* b) Chara c) Fungi d) Virus.
20. Akinite formation is seen in______________
    a) Red Algae b) Yellow Algae c) Fungi d) Blue green Algae*.

ANSWER:*
1. The stonewort’s belong to_________________  
   a) Oedogonials b) Vovocales c) Charales* d) Bryophytes
2. The vegetative reproduction in Chara takes place by______________  
   a) Amylum Starch b) Bulbils c) Secondary protonema d) All of the above*.
3. Sexual reproduction in Chara takes place by___________  
   a) Amylum star b) Nucule c) Globule d) Nucule & Globule*
4. Antherozoids of Chara are_________________________  
   a) Single flagellate b) Biflagellate* c) Multiflagellate d) aflagellate
5. The Chara plants remain covered by_________________  
   a) Potassium carbonate b) Sodium Carbonate c) Calcium Carbonate* d) Sodium bi Carbonate.
6. The Manubrium is found in_______________________  
   a) Nucule of Chara b) Globule of Chara* c) Bulbils of Chara d) Amylum Star of Chara
7. The chloroplast of Chara are_______________________  
   a) Girdle shaped b) Cup shaped c) Spiral d) Discoid*
8. The Corona is found in___________________________  
   a) Nucule of Chara* b) Globule of Chara c) Bulbils of Chara d) Protenema of Chara
9. Secondary protonema is found in___________________  
   a) Oedogonium b) Volvox c) Spirogyra d) Chara*
10. Storage product of Chara is_______________________  
    a) DNA b) Starch* c) Protein d) Oils
11. It is common terrestrial Alga of drying mud_______________  
     a) Nostoc b) Chara c) Spirogyra d) Botrydium*
12. Botrydium belongs to class_______________________  
     a) Rhodophyceae b) Xanthophyceae* c) Cyanophyceae d) Diatoms
13. The plant body of Botrydium is_______________________  
     a) Unicellular b) Multinucleated c) Both a & b* d) None of the above.
14. The vesicles of Botrydium remain encrusted with___________  
     a) Sodium carbonate b) Sodium bi Carbonate c) Sodium chloride d) Calcium Carbonate
15. Photosynthetic product of Botrydium is___________________  
     a) Starch b) Oil c) Fat d) Both b & c*.
16. Sexual reproduction in Botrydium is___________________  
     a) Oogamous b) Anisogamous c) isogamous* d) All of the above.
17. Asexual reproduction in Botrydium leads to formation of___________________  
     a) Zoospores* b) Conidia c) Meiospores d) Megaspore
18. Chromatophores in Botrydium are_______________________  
     a) Ribbon like b) Oval c) Discoid* d) Linear
19. Siphonous form of Algae is_______________________  
     a) Chara b) Nostoc c) Hydrodictyon d) Botrydium*
20. Chief Pigment of Xanthophyceae members are___________________  
     a) Chlorophyll-a b) Chlorophyll-e c) β carotene d) All of the above*.

ANSWER:*
1. The study of Fungi is called as _____________
   a) Mycology* b) Cytology c) Algology d) Embryology

2. Fungi Lack _____________
   a) Ribosomes b) Cell wall c) Chloroplast* d) Nucleus

3. Cell wall of fungi is composed of _____________
   a) Cellulose b) Chitin* c) Cellulose d) Cellulose & Hemicellulose.

4. White rust of crucifers is caused by _____________
   a) Puccinia. b) Ustilago c) Albugo* d) Peziza

5. Albugo candida is _____________
   a) Saprophytic fungus b) Parasitic fungus* c) Autotrophic fungus d) Epizoic fungus

6. In Mucor, during sexual reproduction, fusion occurs between two _____________
   a) Gametes. b) Hyphae c) Gametangia d) Sporangia.

7. The sexual spores are _____________ in Mucor
   a) Motile b) Non-motile* c) Flagellated d) Capsulated

8. The fruiting body of Eurotium is known as _____________
   a) Apothecium b) Perithecium c) Cleistothecium* d) Stroma

9. Commercial source of citric acid from sugar involves fermentation by _____________
   a) Citrus fruit b) Bacteria c) Penicillium d) Aspergillus

10. In Agaricus, the fruiting body is made up of _____________
    a) Primary mycelium b) Secondary mycelium c) Tertiary mycelium* d) Haploid mycelium

11. Fruiting body of Agaricus is called as _____________
    a) Asccocarp b) Basidiocarp* c) Ergot d) Stipe.

12. Umbrella like cap of mushroom is _____________
    a) Pileus* b) Basidium c) Gill d) Capsid.

13. Tikka disease of groundnut is caused by _____________
    a) Aspergillus b) Albugo c) Alternaria d) Cercospora*

14. Penicillin was discovered by _____________
    a) Alexander Fleming*. b) AF Blakeslee c) Elie Metchnikoff d) Felix du Jardin

15. Which of the following is used as human food _____________
    a) Agaricus b) Coprinus c) Amanita d) Smut.

**ANSWER:**