

Botany

1. Which of the following is not the universal rule of binomial nomenclature?
 1. Biological names are generally printed in italics
 2. Biological names are never Latinized
 3. First word in biological name represents genus
 4. Specific epithet starts with small letter
2. The classification system which is based on evolutionary relationships between various organisms is called:
 1. Artificial classification
 2. Natural classification
 3. Phylogenetic classification
 4. Both "1" and "2"
3. Swollen leaf base is called:
 1. Rachis
 2. Pulvinus
 3. Petiole
 4. Peduncle
4. The flower in which the gynoecium occupies the highest position and while the other parts are situated below gynoecium, is:
 1. Hypogynous
 2. Perigynous
 3. Epigynous
 4. Zygomorphic
5. When the protoxylem lies towards the periphery and the metaxylem lies towards the center, such arrangement of primary xylem is called:
 1. Endarch
 2. Exarch
 3. Mesarch
 4. Endo-mesarch
6. Which of the following is not true for facilitated diffusion?
 1. Requires special membrane protein
 2. Is highly selective
 3. Transport saturates
 4. Uphill transport
7. The transpiration driven ascent of xylem sap depends on which property of water:
 1. Cohesion
 2. Adhesion
 3. Surface tension
 4. All the above
8. Which of the following element is constituent of the ring structure of chlorophyll?
 1. Magnesium
 2. Calcium
 3. Iron
 4. Phosphorous

9. During photosynthesis, ATP synthesis is linked to the development of proton gradient across:
1. Thylakoid membrane
 2. Outer membrane of chloroplast
 3. Inner membrane of chloroplast
 4. Inner membrane of mitochondria
10. When carbohydrates will be used as substrate and fully oxidized, respiratory quotient will be equal to one, because:
1. Equal amounts of CO_2 and O_2 are evolved and consumed respectively
 2. Equal amounts of CO_2 and O_2 are consumed and evolved respectively
 3. Amount of CO_2 evolved is more than O_2 consumed.
 4. Amount of CO_2 evolved is less than O_2 consumed
11. The region where body of the ovule fuses with the funiculus is called:
1. Integument
 2. Micropyle
 3. Gametophyte
 4. Hilum
12. Transfer of pollen grains from anther to stigma of the same flower is called:
1. Geitonogamy
 2. Xenogamy
 3. Autogamy
 4. Syngamy
13. In grass family, single cotyledon of embryo is called:
1. Scutellum
 2. Hypocotyl
 3. Epicotyl
 4. Radical
14. When an allele is unable to express itself in presence of another allele, it is said to be:
1. Dominant
 2. Complementary
 3. Recessive
 4. Codominant
15. Which of the following statement regarding DNA is false?
1. Two polynucleotide chains have antiparallel polarity
 2. The bases in the two polynucleotide chains are paired through hydrogen bonds
 3. The two polynucleotide chains are spirally coiled
 4. The backbone of polynucleotide is constituted by sugar-phosphate
16. The interaction where one species is benefited and the other is neither benefited nor harmed is called:
1. Amensalism
 2. Commensalism
 3. Parasitism
 4. Mutualism

17. Callus is

1. Unorganized mass of cells obtained in tissue culture
2. Embryo forming tissue
3. A Protein
4. A chemical used in tissue culture

18. Which of the following is most important free-living fungus used as biological control against fungal pathogens in plants?

1. Saccharomyces
2. Rhizobium
3. Trichoderma
4. Candida

19. Pyramid of energy is:

1. Always Upright
2. Always Inverted
3. Never upright
4. Can be both upright and inverted

20. Which of the following leads to biodiversity loss?

1. Habitat loss and fragmentation
2. Over-exploitation
3. Alien species invasion
4. All the above

SAMPLE QUESTIONS

Note: These questions are illustrative. The scope, arrangement, variety, difficulty level etc in the actual question paper may vary.

GENERAL CHEMISTRY.

- Which of following elements will tend to lose two electrons and become a divalent cation?
(1) Sodium (2) Calcium (3) Sulphur (4) Scandium **(2)**
- The reason of stability of completely half filled sub shells is :
(1) Symmetric distribution of electrons (2) High exchange energy
(3) Smaller Columbic repulsion's (4) All of the above **(4)**
- A worker requires 100 mL solution of 5% NaCl from a stock solution of 20% NaCl, it can be prepared by:
(1) Diluting 10 mL stock with 90 mL water (2) Diluting 20 mL stock with 80 mL water
(3) Diluting 25 mL stock with 75 mL water (4) Diluting 05 mL stock with 95 mL water
(3)
- The versatile technique for isolation, purification and separation of organic compounds is:
(1)Crystallization (2) Distillation (3) Sublimation (4) Chromatography **(4)**
- The reaction $\text{CH}_3\text{CH}_2\text{I} + \text{KOH}(\text{aq}) \longrightarrow \text{CH}_3\text{CH}_2\text{OH} + \text{KI}$ can be classified as
(1)Substitution reaction (2) Nucleophilic Substitution reaction
(3) Electrophilic Substitution reaction (4) Elimination reaction **(2)**
- The oxides of which of the following elements contribute to Tropospheric acid rain:
(1) Carbon (2) Sulphur
(3)Nitrogen (4) All of these **(4)**
- Which of the following is a halogen containing organic compound used in medicinal applications?
(1) Chloramphenicol (2) Thyroxin
(3)Halothane (4) All of these **(4)**

8. Biomolecules that carry genetic information in cells are ?

- (1) Poly Peptides (2) Polysaccharides
(3) Poly Nucleotides (4) All of these (3)

9. Which of the following is a fat soluble Vitamin?

- (1) Vitamin B (2) Vitamin C
(3) Vitamin A (4) All of these (3)

10. Which of the following biodegradable polymers find application in surgical sutures?

- (1) Polystyrene (2) Polypropene
(3) Neoprene (4) Polyglycollic acid (4)

11. In the anti-acid action sodium bicarbonate reacts with HCl in the stomach to produce?

- (1) Sodium carbonate and NaCl (2) Carbonic acid and NaCl
(3) Both of these (4) None of these (2)

12. The non narcotic analgesic that prevents platelet coagulation is?

- (1) Acetaminophen (2) Acetylsalicylic acid
(3) Sulphonamide (4) Naproxen (2)

13. Which of the following chemicals are used in food preservation?

- (1) Sodium benzoate (2) EDTA
(3) BHA (Butylated hydroxyl anisole) (4) All of these (4)

14. The branched polysaccharide having α -1,4-glycosidic linkage is ?

- (1) Amylose (2) Amylopectin
(3) Cellulose (4) Lactose (2)

15. Which of the following is a specific test for proteins?

- (1) Beilstein Test (2) Biuret Test
(3) Benedict's Test (4) Molisch Test (2)

16. At the iso-electronic point, amino acids are present are?

- | | |
|--|---|
| (1) $\text{H}_2\text{N}-\text{CHR}-\text{COOH}$ | (2) $\text{H}_3\text{N}^+-\text{CHR}-\text{COOH}$ |
| (3) $\text{H}_2\text{N}-\text{CHR}-\text{COO}^-$ | (4) $\text{H}_3\text{N}^+-\text{CHR}-\text{COO}^-$ (4) |

17. Identify the correct answer

- | I | II |
|----------------------------|---------------------------------------|
| I. Ascorbic acid | a. Beri-beri |
| II. Retinol | b. Cracked Lips |
| III. Riboflavin | c. Scurvy |
| IV. Thiamine | d. Night blindness |
| (1) I-b; II-a; III-c; IV-d | (2) I-a; II-b; III-c; IV-d |
| (3) I-d; II-c; III-b; IV-a | (4) I-c; II-d; III-b; IV-a (4) |

18. Barbituric acid and its derivatives are well known?

- | | |
|-------------------|-----------------------------|
| (1) Tranquilizers | (2) Antiseptics |
| (3) Analgesics | (4) Antipyretics (1) |

19. Primary amine groups can be detected by?

- | | |
|------------------------|---|
| (1) Lucas reagent | (2) Carbylamine Test |
| (3) Silver mirror Test | (4) Libermann's Nitroso test (2) |

20. Carboxylic acids react with sodium bicarbonate producing a brisk effervescence due to evolution of ?

- | | |
|---------------------------------|-------------------------------------|
| (1) H_2 gas | (2) CO_2 gas |
| (3) H_2O vapors | (4) Large amount of heat (2) |

21. A non spontaneous redox reaction requiring electrical energy to start occurs in?

- | | |
|---------------------------|---------------------------|
| (1) Galvanic Cells | (2) Electrolytic Cells |
| (3) Electrochemical Cells | (4) Fuel Cells (2) |

22. Identify the correct match for metal toxicity antidote:

- | I | II |
|-----------------------|----------------------------------|
| I. Lead Poisoning | a. d- pencillamine |
| II. Excess Copper | b. EDTA |
| III. Excess Iron | c. Desferrioxamine |
| (1) I-a; II-b; III-c. | (2) I-a; II-c; III-b |
| (3) I-b; II-c; III-a. | (4) I-b; II-a; III-c. (4) |

23. Many biological compounds are coordination compounds. Which of the following contains cobalt metal?

- | | |
|-----------------|-----------------------------|
| (1) Chlorophyll | (2) Hemoglobin |
| (3) Cytochrome | (4) Vitamin B-12 (4) |

24. Reaction of benzene with Cl_2 in presence of FeCl_3 forming chlorobenzene, is mechanistically an example of ?

- | | |
|-----------------------------------|------------------------------|
| (1) Addition reaction | (2) Substitution reaction |
| (3) Addition elimination reaction | (4) None of these (3) |

25. Inversion of configuration is a characteristic of ?

- | | |
|---|---|
| (1) All substitution reactions | (2) SN^1 type substitution reactions |
| (3) SN^2 type substitution reactions | (4) Electrophilic substitution reactions (3) |

26. Alcohols react with carboxylic acids to produce fruity smelling compounds called as?

- | | |
|---------------|-----------------------|
| (1) Alkoxides | (2) Carboxylates |
| (3) Ethers | (4) Esters (4) |

27. Formalin used for preserving the biological samples is chemically?

- | | |
|------------------|----------------------------|
| (1) Formaldehyde | (2) Formic acid |
| (3) Acetaldehyde | (4) Acetic acid (1) |

27. A disaccharide which gets hydrolyzed to two glucose monosaccharides ?

- (1) Lactose (2) Sucrose
(3) Maltose (4) Starch (3)

28. Which Nitrogen base is not present in DNA?

- (1) Adenine (2) Guanine
(3) Cytosine (4) Uracil (4)

29. Identify the wrong statement?

- (1) Osmotic pressure is colligative property
(2) 1 molal solution of HCl and HF lower the freezing point of water equally
(3) Reverse osmosis is a method of water purification and water desalination
(4) Molality as concentration term is independent of Temperature. (2)

30. What is correct for Pharmacokinetics?

- (1) It is the study of how an organism affects a drug.
(2) It refers to the chemical kinetics of a drug molecule within the biosystems.
(3) It determines drug dosage, benefit, and adverse effects of a drug.
(4) All of these. (4)

- Q.1: Homeostasis is
- (a) Tendency to change with change in environment
 - (b) Tendency to resist change
 - (c) Disturbance in regulatory controls
 - (d) Plant and animal extracts used in homeopathy
- Q.2: Who was the first to classify animals into groups?
- (a) Auerbauch
 - (b) Aristotle
 - (c) Carolus Linnaeus
 - (d) Darwin
- Q.3: In Saurology we study about
- (a) Flying Birds
 - (b) Lizards
 - (c) Sea Snakes
 - (d) Earth worm
- Q.4: Approximately what percentage of existing animal species are invertebrates?
- (a) 20%
 - (b) 50%
 - (c) 70%
 - (d) 95%
- Q.5: Cephalopods are:
- (a) Herbivorous
 - (b) Carnivorous
 - (c) Omnivorous
 - (d) Scavengers
- Q.6: Select the class with wrong example:
- (a) Aplacophora e.g., *Chaetoderma*
 - (b) Polyplacophora e.g., *Chiton*
 - (c) Cephalopoda e.g., *Dentalium*
 - (d) Gastropoda e.g., *Achatina*

- Q.7: Larval form of a Trematode which penetrates a gastropod mollusc is:
- (a) Hexacanth (b) Redia
(c) Cercaria (d) Miracidium
- Q.8: Which of the following statements with regard to *Taenia saginata* is true?
- (a) It has double circle of hooks on the rostellum
(b) Its life history involves pig as an intermediate host
(c) It has two large hooks on the scolex
(d) It has no rostellar hooks
- Q.9: Which of the following is inhabitant of fresh water bodies?
- (a) *Hydra* (b) *Obelia*
(c) *Turbularia* (d) *Gorgonia*
- Q.10: Which of the following is a radically symmetrical animal?
- (a) Planarian (b) Rotifer
(c) Fluke (d) Sea Anemone
- Q.11: In the Insects compound eyes are formed of:
- (a) Ocelli (b) Ommatidia
(c) Eye spots (d) Haematochrome
- Q.12: Excretory organs of crustaceans are:
- (a) Nephridia (b) Malpighian tubules
(c) Green glands (d) Flame cells
- Q.13: The boring sponge is
- (a) *Spongilla* (b) *Euplectella*
(c) *Cliona* (d) *Euspongia*

Q.14: Aristotle lantern occurs in:

- (a) Sea urchin
- (b) Asterias
- (c) Ophiothuria
- (d) Sea Anemone

Q.15: Alimentary canal is absent in

- (a) Planeria
- (b) Liver fluke
- (c) Tapeworm
- (d) Blood fluke

Q.16: Most appropriate term for the life cycle of *Obelia* is

- (a) Metagenesis
- (b) Metamorphosis
- (c) Neoteny
- (d) Alternation of generations

Q.17: Who first recognised that the sponges are animals?

- (a) Trembley
- (b) Aristotle
- (c) Linnaeus
- (d) Ellis

Q.18: A distinguishing feature of cnidarians is the presence of

- (a) flame cells
- (b) nephridiopores
- (c) statocysts
- (d) cnidoblasts

Q.19: Earthworms are mainly

- (a) Ureotelic
- (b) Aminotelic
- (c) Ammonotelic
- (d) Uricotelic

Q.20: The bivalve mollusk, *Pecten* is commonly called

- (a) Sea mussel
- (b) Scallop
- (c) Razor shell
- (d) Razor fish