SURYA
POWER TO SCORE

BIOLOGY

Bio-Botany & Bio-Zoology

One Mark Questions with Answers

VOLUME - I & II

11

EASY PASS MINIMUM MATERIAL

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BIO-BOTANY

One Marks

1 LIVING WORLD

EVALUATION

1. **Which one of the following statements about virus is correct?**
   a) Possess their own metabolic system
   b) They are facultative parasites
   c) They contain DNA or RNA
   d) Enzymes are present **[Ans. (c)]**

2. **Identify the incorrect statement about the Gram-positive bacteria**
   a) Teichoic acid absent
   b) High percentage of peptidoglycan is found in cell wall
   c) Cell wall is single layered
   d) Lipopolysaccharide is present in cell wall **[Ans. (a)]**

3. **Identify the Archaebacterium**
   a) Acetobacter b) Erwinia
   c) Treponema d) Methano-bacterium **[Ans. (d)]**

4. **The correct statement regarding Blue green algae is**
   a) lack of motile structures
   b) presence of cellulose in cell wall
   c) absence of mucilage around the thallus
   d) Presence of floridean starch **[Ans. (a)]**

5. **Identify the correctly matched pair**
   a) Actinomycete – a) Late blight
   b) Mycoplasma – b) lumpy jaw
   c) Bacteria – c) Crown gall
   d) Fungi – d) sandal spike **[Ans. (c)]**

ADDITIONAL

6. Life on earth exists within a complex structure called_____.

a) Atmosphere b) Biosphere
c) Stratosphere d) Ozone **[Ans. (b)]**

7. Growth in living things is ____.

a) Intrinsic b) Linear
c) Spiral d) Extrinsic **[Ans. (a)]**

8. Asexual reproduction occurs by Regeneration in ____.

a) Planaria b)Spirogyra
c) Yeast d) Bacteria **[Ans. (a)]**

9. Viruses have nucleic acid core surrounded by ____.

a) Protein coat b)Lipid
c) Cellulose d) Glucose **[Ans. (a)]**

10. Who proved that viruses are smaller than bacteria?

a) Stanley b) Dimitry Ivanosky
c) d'Herelle d) Twort **[Ans. (b)]**

11. The size of TMV is ____.

a) 100 X 20nm b) 300 X 20nm
c) 400 X 20nm d) 500 X 20nm **[Ans. (b)]**

12. The genetic material in Cauliflower mosaic virus _____.

a) RNA b) DNA
c) both A and B d) Ribosomes **[Ans. (b)]**

13. Plant viruses have ___.

a) DNA b) RNA
c) Both DNA and RNA d) Coiled Nucleus **[Ans. (b)]**

14. The molecular weight of TMV is ___.

a) 36 X 10^6 Dalton b) 39 X 10^5 Dalton
c) 39 X 10^6 Dalton d) 39 X 10^4 Dalton **[Ans. (c)]**

15. The genetic material of T4 Bacteriophages is

a) ds DNA b) ss DNA
c) ds RNA d) ss RNA **[Ans. (a)]**

16. The steps involved in lytic cycle is _____.

a) Adsorption, Penetration, Synthesis, Assemble and Maturation, Release

b) Adsorption, Synthesis, Penetration, Release, Assemble and Maturation

c) Adsorption, assemble and Maturation, Penetration, Release, Synthesis

d) Adsorption, Penetration, Assemble and Maturation, Synthesis, Release **[Ans. (a)]**

17. Viroid is discovered by ____.

a) T.O.Diener b) Twort

c) Randles d) d'Herelle **[Ans. (a)]**

18. Viroids differ from viruses because they have ___.

a) Satellite RNA packed with viral genome

b) Naked RNA molecule only

c) Naked DNA molecule only

d) Naked DNA with viral genome **[Ans. (b)]**

19. Two Kingdom System of classification was given by ____.

a) Carl Linnaeus b) Copeland

c) Ernst Hackel d) R.H.Whittaker **[Ans. (a)]**

20. Five Kingdom System of classification was given by ____.

a) Copeland b) R.H.Whittaker

c) Haeckel d) Carl Linnaeus **[Ans. (b)]**

21. Ted tide is caused by ___.

a) Ooflagellate b) Xanthophyceae

c) Dinoflagellate d) Bacillariophyta **[Ans. (c)]**

22. The study of Bacteria is ___.

a) Bacteriology b) Virology

c) Cosmology d) Pedology **[Ans. (a)]**

23. Typhoid is caused by ____.

a) Acetobacter b) Rhizobium

c) Salmonella typhi d) E.coli **[Ans. (c)]**

24. Ulcer is caused by ___.

a) Helicobacter pylori b) Salmonella
c) Lactobacillus d) Clostridium **[Ans. (a)]**

25. The special type of pili helps in conjugation called ___.

a) Flagella b) Sexpili
c) Mesosomes d) Plasmid **[Ans. (b)]**

26. _____ are thick walled resting spores.

a) Exospores b) Zoospores
c) Mesospores d) Endospores **[Ans. (d)]**

27. Match the following

A) Streptomyces - i) Food poisoning
B) Rhizobium -ii) Antibiotic
C) Nitrosomonas -iii) Nitrogen fixation
D) Acetobacter -iv)Nitrification
-v) Vinegar synthesis

a) A-iii),B-v),C-iv),D-i) b) A-ii),B-iii),C-iv),D-v)
c) A-v),B-iv),C-ii),D-i) d) A-i),B-ii),C-iii),D-iv) **[Ans. (b)]**

28. Retting of fiber is caused by ___.

a) Clostridium tertium b) E.coli
c) C.acetobutylicum d) C.telani **[Ans. (a)]**

29. ____ bacteria live in extreme hot, salinity, low pH.

a) Archaebacteria b) Eubacteria
c) Cyanobacteria d) Myxophyceae **[Ans. (a)]**

30. Tag Polymerase is obtained from

a) Acetobacter b) E.coli
c) Thermus aquaticus d) Rhizobium **[Ans. (c)]**

31. The single cell protein is obtained from ____.

a) Spirulina b) Azolla
c) Oscillatoria d) Gleocapsa **[Ans. (a)]**

32. Pleuropneumonia is caused by ____.

a) Bacteria b) Mycoplasma mycoides
c) Salmonella d) Viruses **[Ans. (b)]**

33. ___ grows in oral cavities and cause lumpy jaw.

a) Frankia b) Clostridium
c) Actinomycetes bovis d) Acetobacter **[Ans. (c)]**

34. Penicillin was discovered by ___ in the year 1928.

a) Alexander Flemming b) Pasteur
c) Robert Gallo d) Ivanowsky **[Ans. (a)]**

35. Asexual phase in fungal reproduction is ____.

a) Teleomorph b) Holomorph
c) Anamorph d) Zygomorph **[Ans. (c)]**

36. The book "Introductory Mycology" was entitled by ____.

a) J. Alexopoulos and Charles W. Mims
b) Michaeli
c) Butler
d) Ivanowsky **[Ans. (a)]**

37. The completely closed ascocarp (fruit body) called ____.

a) Pycnidium b) Cleitothecium
c) Apothecium d) Perithecium **[Ans. (b)]**

38. ____ is imperfect fungi.

a) Deutromycetes b) Basidiomycetes
c) Actinomycetes d) Oomycetes **[Ans. (a)]**

39. Ergot is obtained from ____.

a) Penicillin b) Clavicepsis purpurea
c) Aspergillus d) Agaricus **[Ans. (b)]**

40. ____ helps in coagulation of milk in cheese manufacturing from Mucor species.

a) Rennet b) Groundnut
c) Peanut d) Cashew nut **[Ans. (a)]**

41. Rust of wheat is caused by ____.

a) Rhizopus b) Albugo
c) Puccinia graministritici d) Ustilago **[Ans. (c)]**

42. Give an example for orchid Mycorrhizae ____.

a) Oidiodendron b) Rhizopus
c) Rhizoctonia d) Gigaspora **[Ans. (c)]**

43. Lichen which grow on wood is called ____.

a) Lignicolous b) Tericolous
c) Corticolous d) Saxicolous **[Ans. (a)]**

44. Read the following statements (A to E) and select the option with all correct statements

A) Mosses and Lichens are the first organisms to colonise a bare rock.
B) Selaginella is a homosporous pteridophyte.
C) Coralloid roots in Cycas have VAM.
D) Main plant body in bryophytes is gametophytic, whereas in pteridophytes it is sporophytic.
E) In gymnosperms, male and female gametophytes are present within sporangia located on sporophyte.

a) B, C and E b) A, C and D
c) B, C and D d) A, D and E **[Ans. (d)]**

45. Select the mismatch

a) Pinus — Dioecious b) Salvinia — Heterosporous
c) Cycas — Dioecious d) Equisetum — Homosporou

[Ans. (a)]

46. Which of the following is correctlymatched for the product produced bythem?

a) Acetobacter acetic : Antibiotics
b) Methanobacterium : Lactic acid
c) Penicillium notatum : Acetic acid
d) Saccharomyces cerevisiae : Ethanol **[Ans. (d)]**

47. Which of the following statements iswrong for viroids?

a) They lack a protein coat
b) They are smaller than viruses
c) They causes infections
d) Their RNA is a high molecular weight **[Ans. (d)]**

48. How many organisms in the list below are autotrophs?

- *Lactobacillus, Nostoc, Chara, Nitrosomonas, Nitrobacter, Streptomyces, Saccharomyces,*
- *Trypanosoma, Porphyra, Wolffia*

a) Four b) Five c) Six d) Three **[Ans. (c)]**

49. Read the following five statement (A-E) and answer as asked next to them

a) In *Equisetum*, the female gametophyte is retained on the parent sporophyte
b) In Ginkgo, male gametophyte is notindependent
c) The sporophyte in Riccia is moredeveloped than that in Polytrichum
d) Sexual reproduction in Volvox isisogamous
e) The spores of slime moulds lack cellwalls

How many of the above statement are correct?

a) Two b) Three c) Four d) One **[Ans. (d)]**

50. Which one of the following statements is wrong?

a) Cyanobacteria are also called blue-green algae
b) Golden algae are also called desmids
c) Eubacteria are also called false bacteria
d) Phycomycetes are also called algal fungi **[Ans. (c)]**

51. Flagellated male gametes are present in all the three of which one of the following sets?

a) Riccia, Dryopteris and Cycas
b) Anthoceros, Funaria and Spirogyra
c) Zygnema, Saprolegnia and Hydrilla
d) Fucus, Marsilea and Calotropis **[Ans. (a)]**

52. Select the correct statement

a) Gymnosperms are both homosporous and heterosporous
b) *Salvinia, Ginkgo* and *Pinus* all are gymnosperms
c) Sequoia is one of the tallest trees
d) The leaves of gymnosperms are not well adapted to extremes of climate **[Ans. (c)]**

2 PLANT KINGDOM

EVALUATION

1. **Which of the plant group has gametophyte as a dominant phase?**
   a. Pteridophytes b. Bryophytes
   c. Gymnosperm d. Angiosperm **[Ans. (b)]**

2. **Which of following represent gametophytic generation in pteridophytes**
   a. Prothallus b. Thallus
   c. Cone d. Rhizophore **[Ans. (a)]**

3. **The haploid number of chromosomes for an Angiosperm is 14, the number of chromosomes in its endosperm would be**
   a. 7 b. 14
   c) 42 d. 28 **[Ans. (c)]**

4. **Endosperm in Gymnosperm is formed**
   a) At the time of fertilization
   b) Before fertilization
   c) After fertilization
   d) Along with the development of embryo **[Ans. (b)]**

ADDITIONAL

5. **The study of algae is called ____.**
   a) Mycology b) Pedeology
   c) Cytology d) Phycology **[Ans. (d)]**

6. **Father of Indian Phycology is ___.**
   a) M.O.Parthasarathy b) M.O.Palani
   c) M.S.Randhawa d) Fritschi **[Ans. (a)]**

7. Volvox, Spirogyra shows

a) Haplontic life cycle
b) Diplontic life cycle
c) Haplodiplontic life cycle
d) Haplobiontic life cycle **[Ans. (a)]**

8. Match the following

A) Unicellular motile - 1. Volvox
B) Unicellular non – motile - 2. Hydrodictyon
C) Colonial motile - 3.Chalmydomonas
D) Colonial non – motile - 4.Chlorella

a) A – 3, B – 4, C – 1, D – 2
b) A – 4, B – 3, C – 2, D – 1
c) A – 1, B – 2, C – 3, D – 4
d) A – 4, B – 3, C – 2, D – 1 **[Ans. (a)]**

9. _____ is thallus is encrusted with Calcium Carbonate.

a) Chara b) Spirogyra
c) Volvox d) Ulva **[Ans. (a)]**

10. Thin walled non – motile spores _____.

a) Akinetes b) Planococci
c) Aplanospores d) Exospores **[Ans. (c)]**

11. The book "The structure and reproduction of the Algae" is entitled by ___.

a) M.O.P.Iyengar b) Panda
c) F.E.Fritsch d) William **[Ans. (c)]**

12. Giant Kelp is from ____.

a) Lycopodium b) Chara
c) Laminaria d) Voucheria **[Ans. (c)]**

13. Match the following.

A) Cyanophyceae - a) Green colour
B) Chlorophyceae - b) Blue – green colour

C) Phaeophyceae - c) Red colour
D) Rhodophyceae - d) Brown colour
a) Aa, Bb, Cc, Dd
b) Aa, Bc, Cd, Da
c) Ab, Ba, Cd, Dc
d) Ac, Bd, Ca, Db [**Ans. (c)**]

14. _____ is used as bio fuel production.
a) Botryococus b) Chara
c) Spirullina d) Ulothrix [**Ans. (a)**]

15. _____ are rich source of Iodine.
a) Ulva b) Kelp
c) Nostoc d) Volvox [**Ans. (b)**]

16. Carrageenan is obtained from _____.
a) Posteliapalmaformis b) Laminaria
c) Chondrus crispers d) Gelidium [**Ans. (c)**]

17. Red rust of coffee by _____.
a) Cephaleurous b) Sargassum
c) Laminaria d) Chondrus [**Ans. (a)**]

18. Father of Indian Bryology ___.
a) M.O.Parthasarathy\ b) Pandey
c) Shiv Ram Kashyap\ d) Robertson [**Ans. (c)**]

19. Which one is Amphibians of Plant Kingdom?
a) Bryophyte b) Pteridophytes
c) Algae d) Lichen [**Ans. (a)**]

20. _____ is essential for fertilization.
a) Air b) Dew
c) Water d) Snow [**Ans. (c)**]

21. Bryophytes are _____.
a) Isogames b) Anisogames
c) Homosporous d) Heterosporous [**Ans. (c)**]

22. ____ is used in horticulture as packing material of plants.

a) Funaria b) Marchantia
c) Riella d) Sphagnum **[Ans. (d)]**

23. ___ are Vascular Cryptogams.

a) Bryophytes b) Gymnosperms
c) Pteridophytes d) Angiosperms **[Ans. (c)]**

24. Which one is used as bio – fertilizer?

a) Funaria b) Marchantia
c) Azolla d) Anthoceros **[Ans. (c)]**

25. Xylem is star shaped in ____.

a) Plectostele b) Actinostele
c) Eustele d) Meristele **[Ans. (b)]**

26. Xylem is surrounded by phloem with pith at the centre ____.

a) Actinostele b) Siphonostele
c) Plectostele d) Protostele **[Ans. (b)]**

27. _____ are naked seed producing plants.

a) Angiosperms b) Bryophytes
c) Gymnosperms d) Pteridophytes **[Ans. (c)]**

28. Amber is produced by _____.

a) Pinitessuccinifera b) Cycas
c) Ephedra d) Gnetum **[Ans. (a)]**

29. Vessels are present in ____.

a) Gnetum b) Pinus
c) Cycas d) Welwitschia **[Ans. (a)]**

30. Mycorrhizae are seen in _____.

a) Gnetum b) Cycas
c) Ephedra d) Pinus **[Ans. (d)]**

31. Canada balsam is obtained from ____.

a) Abiesbalsamea b) Cedrus
c) Ephedra d) Thuja **[Ans. (a)]**

32. Father of Indian Paleobotany is _____.

a) Williamson b) Sporne
c) Steward d) BirbalSahni **[Ans. (d)]**

33. In Tamil Nadu, National Wood Fossil Park is seen in___.

a) Cuddalore b) Tindivanam
c) Thiruvakkarai d) Tiruvannamalai **[Ans. (c)]**

34. BirbalShani Institute of Paleobotany is located in ____.

a) Bihar b) Tamil Nadu
c) Lucknow d) Gujarat **[Ans. (c)]**

35. Vascular bundles are closed in ____.

a) Monocot b) Dicot
c) Pteridophytes d) Bryophytes **[Ans. (a)]**

3 VEGETATIVE MORPHOLOGY

EVALUATION

1. **Roots are**
   a) Descending, negatively geotrophic, positively phototrophic
   b) Descending, positively geotrophic, negatively phototrophic
   c) Ascending, positively geotrophic, negatively phototrophic
   d) Ascending, negatively geotrophic, positively phototrophic
   [Ans. (b)]

2. **When the root is thick and fleshy, but does not take a definite shape, it said to be**
   a) Nodulose root b) Tubercular root
   c) Moniliform root d) Fasciculated root **[Ans. (b)]**

3. **Example for negatively geotropic roots**
   a) Ipomoea, Dahlia b) Asparagus, Ruellia
   c) Vitis, Portulaca d) Avicennia, Rhizophora
   [Ans. (d)]

4. **Curcuma amada, Curcuma domestica, Asparagus, Maranta are example of**
   a) Tuberous root b) Beaded root
   c) Moniliform root d) Nodulose root **[Ans. (d)]**

5. **Bryophyllum and Dioscorea are example for**
   a) Foliar bud, apical bud b) Foliar bud, cauline bud
   c) Cauline bud, apical bud d) Cauline bud, foliar bud
   [Ans. (b)]

6. **Which of the following is polycarpic plant?**
   a) Mangifera b) Bambusa
   c) Musa d) Agave **[Ans. (a)]**

7. Which of the following is correct statement?

a. In ***Pisum sativum*** leaflets modified into tendrils
b. In *Atalantia* terminal bud is modified into thorns
c. In *Nepenthes* midrib is modified into lid
d. In *Smilax* inflorescence axis is modified into tendrils

[Ans. (a)]

8. Select the mismatch pair

a. *Sagittaria* - Heterophylly
b. *Lablab* - Trifoliolate
c. *Begonia* - Leaf mosaic
d. *Allamanda* - Ternate phyllotaxy **[Ans. (d)]**

ADDITIONAL

9. Vegetative Morphology includes _____.

a) Flowers b) Shoot and Root systems
c) Fruits d) Inflorescence **[Ans. (b)]**

10. Reproductive Morphology includes _____.

a) Root b) Leaf
c) Shoot d) Fruits, Flowers **[Ans. (d)]**

11. Plants grow on water is called _____.

a) Aquatic b) Terrestrial
c) Both a & b d) None of these **[Ans. (a)]**

12. Annual plants are also called as _____.

a) Ephemerals b) Xerophytes
c) Mesophytes d) Lithophytes **[Ans. (a)]**

13. Root tip is covered by _____ cell.

a) Chlorenchyma b) Collenchyma
c) Parenchyma d) Sclerenchyma **[Ans. (c)]**

14. Raphanus is example for _____ root.

a) Conical b) Fusiform
c) Napiform d) Breathing root **[Ans. (b)]**

15. Prop root is seen in ____.

a) Banyan b) Mango
c) Neem d) Coconut **[Ans. (a)]**

16. _____ tissue presents in Vanda.

a) Velamen b) Parenchyma
c) Tracheids d) Sclereids **[Ans. (a)]**

17. Photosynthetic roots are present in _____.

a) Viscum b) Tinospora
c) Cassytha d) Orabanche **[Ans. (b)]**

18. Lawn grass is stem modification of ____.

a) Runner b) Stolon
c) Offset d) Sucker **[Ans. (a)]**

19. The potato eyes arise from ____.

a) Axillary bud b) Lateral bud
c) Apical bud d) Adventitious bud **[Ans. (a)]**

20. Match it.

A) Bulb - i) Colacasia
B) Rhizome - ii) Solanum tuberosum
C) Corm - iii) Zingiber officinale
D) Tuber - iv) Allium cepa

a) A – iv), B – iii), C – i), D – ii)
b) A – iv), B – iii), C – ii), D – i)
c) A – iii), B – iv), C – ii), D – i)
d) A – iv), B – iii), C – ii), D – i) **[Ans. (a)]**

21. In Legume, leaf-base becomes broad, thick and swollen is ___.

a) Petiolate b) Petiole
c) Cladode d) Pulvinus **[Ans. (d)]**

22. The arrangement of veins on leaf base is ___.

a) Phyllotaxy b) Margin
c) Venation d) Ligule **[Ans. (c)]**

23. Match it.

A) Leaf Hooks - i) Bignonia
B) Leaf spines - ii) Zizyphus
C) Phyllode - iii) Acacia
D) Pitcher - iv) Nepenthes

a) A – i, B – iii, C – iv, D – ii
b) A – i, B – ii, C – iii, D – iv
c) A – iv, B – ii, C – i, D – ii
d) A – ii, B –i, C – iv, D – iii **[Ans. (b)]**

24. Leaves not falling but Withering on the plant in several members of fagaceae __.

a) Marcesent b) Evergreen
c) Cauducuous d) Deciduous **[Ans. (a)]**

25. ___ leaf shows Centric symmetry.

a) Eucalyptus b) Tridax
c) Grass d) Onion **[Ans. (d)]**

26. Match it.

A) Cauducuous - i) Opuntia
B) Deciduous - ii) Maple
C) Evergreen -iii) Calophyllum
D) Marcescent - iv) Fabaceae

a) A – i), B – ii), C – iii), D – iv)
b) A – i), B – ii), C – iv), D – iii)
c) A – iii), B – i), C – ii), D – iv)
d) A – iv), B –i), C –ii), D – iii) **[Ans. (a)]**

27. ____ plant leaf is modified as Pitcher.

a) Acacia b) Aloe
c) Nepenthes d) Pisum **[Ans. (c)]**

28. Bladderwort is also called as ____.

a) Utriculus b) Nepenthes
c) Sundew d) Discorea **[Ans. (a)]**

4 REPRODUCTIVE MORPHOLOGY

EVALUATION

1. **Vexillary aestivation is characteristic of the family**
   a) Fabaceae b) Asteraceae
   c) Solanaceae d) Brassicaceae **[Ans. (a)]**

2. **Gynoecium with united carpels is termed as**
   a) Apocarpous b) Multicarpellary
   c) Syncarpous d) None of the above **[Ans. (c)]**

3. **Aggregate fruit develops from**
   a) Multicarpellary, apocarpous ovary
   b) Multicarpellary, syncarpous ovary
   c) Multicarpellary ovary
   d) Whole inflorescence **[Ans. (a)]**

4. **In an inflorescence where flowers are borne laterally in an acropetal succesion the position of the youngest floral bud shall be**
   a) Proximal b) Distal
   c) Intercalary d) Anywhere **[Ans. (b)]**

5. **A true fruit is the one where**
   a) Only ovary of the flower develops into fruit
   b) Ovary and calyx of the flower develops into fruit
   c) Ovary, calyx and thalamus of the flower develops into fruit
   d) All floral whorls of the flower develops into fruit **[Ans. (a)]**

ADDITIONAL

6. **___is a branch of Horticulture.**
   a) Floriculture b) Terminal
   c) Axillary d) Cauliflorous **[Ans. (a)]**

7. Inflorescence developed directly from a woody trunk ___.
a) Floriculture b) Terminal
c) Axillary d) Cauliflorous **[Ans. (d)]**

8. _____is an unbranched indeterminate inflorescence.
a) Racemose inflorescence b) Simple raceme
c) Spike d) Spikelet **[Ans. (c)]**

9. ___ with a long and drooping axis bearing small unisexual or bisexual flowers.
a) Catkin b) Spadix
c) Panicle d) Corymb **[Ans. (a)]**

10. A branched raceme is called_____.
a) Catkin b) Spadix
c) Panicle d) Corymb **[Ans. (c)]**

11. The inflorescence possesses both types of florets _____.
a) Compound corymb b) Homogamous head
c) Heterogamous head d) Disc florets **[Ans. (c)]**

12. Axis develops on only one side is called _____.
a) Ray florets b) Monochasial Cyme
c) Helicoid d) Scorpiod **[Ans. (c)]**

13. _____ is true cyme.
a) Simple dichasium b) Compound dichasium
c) Polychasial cyme d) Thyrsus **[Ans. (a)]**

14. Indefinite central axis bears lateral pedicellate cymes _____.
a) Simple dichasium b) Compound dichasium
c) Polychasial cyme d) Thyrsus **[Ans. (d)]**

15. ___ inflorescence consists of small unisexual flowers enclosed.
a) Verticil b) Special inflorescence
c) Cyathium d) Hypanthodium **[Ans. (c)]**

16. Receptacle is a hollow, globose structure consisting unisexual flowers___.
a) Verticil b) Special inflorescence
c) Cyathium d) Hypanthodium **[Ans. (d)]**

17. **A flower contains only one of the essential whorls is called_____.**
a) Perfect flower b) Imperfect flower
c) Staminate flowers d) Hermaphroditic **[Ans. (b)]**

18. **Both male and female flowers are presentin the same plant is called ____.**
a) Monoecious b) Dioecious
c) Andromonoecious d) Gynomonoecious **[Ans. (a)]**

19. **A plant with pistillate, staminate and bisexual flowers ____.**
a) Polygamomonoecious b) Androdioecious
c) Gynodioecious d) Polygamodioecious **[Ans. (a)]**

20. **A plant with staminate flowers and bisexual in one individual and pistillate flowers and bisexual flowers in another individual ____.**
a) Polygamomonoecious b) Androdioecious
c) Gynodioecious d) Polygamodioecious **[Ans. (d)]**

21. **The condition in which bisexual and unisexual flowers occur in a same plant is called____.**
a) Trioecious b) Polygamous
c) Actinomorphic d) Zygomorphic **[Ans. (b)]**

22. **More than two whorls of non–essential floral parts____.**
a) Multiseriate b) Dichlamydeous
c) Homochlamydeous d) Achlamydeous **[Ans. (a)]**

23. **Perianth is absent in ____.**
a) Multiseriate b) Dichlamydeous
c) Homochlamydeous d) Achlamydeous **[Ans. (d)]**

24. **Presence of same number of perianth parts in different whorls of a flower ____.**
a) Apetalous b) Asepalous
c) Merosity d)Isomerous **[Ans. (d)]**

25. Floral parts in three or multiples of three ___.

a) Anisomerous b) Bimerous
c) Trimerous d) Tetramerous **[Ans. (c)]**

26. Calyx that falls after the opening of flower ___.

a) Aposepalous b) Synsepalous
c) Deciduous d) Persistant **[Ans. (c)]**

27. The fruiting calyx is urn shaped in Withania and it is called ____.

a) Campanulate b) Urceolate
c) Tubular d) Petaloid **[Ans. (b)]**

28. Four petals arranged in the form of a cross ____.

a) Apopetalous b) Sympetalous
c) Cruciform d) Caryophyllaceous **[Ans. (c)]**

29. Petals fused to form a bell-shaped corolla ____.

a) Rosaceous b) Papilionaceous
c) Companulate d) Infundibuliform **[Ans. (c)]**

30. Petals fused to form a long narrow tube ____.

a) Rotate b) Hypocrateriform
c) Urceolate d) Bilabiate **[Ans. (b)]**

31. Tubular corolla with a single strap-shaped limb ____.

a) Personate b) Ligulate
c) Apotepalous d) Syntepalous **[Ans. (b)]**

32. Reduced scale like perianth in the members of Poaceae is called ____.

a) Aestivation b) Lodicule
c) Androecium d) Anther **[Ans. (b)]**

33. Anthers connate, filaments free ____.

a) Monadelphous b) Diadelphous
c) Polyadelphous d) Syngenesious **[Ans. (d)]**

34. Stamens are adnate to sepals ____.

a)Synandrous b) Adnation
c) Episepalous d) Epitepalous **[Ans. (c)]**

35. Base of anther is attached to the tip of filament ___.

a) Basifixed b) Dorsifixed
c) Versatile d) Adnate **[Ans. (a)]**

36. Anther dehisces at right angles to the long axis of anther lobe ___.

a) Longitudinal b) Transverse
c) Poricidal d) Valvular **[Ans. (b)]**

37. Style arises from the side of ovary ____.

a) Lateral style b) Discoid
c) Capitate d) Globose **[Ans. (a)]**

38. Stigma feathery which is unbranched ___.

a) Plumose stigma b) Pistillode
c) Anthophore d) Androphore **[Ans. (a)]**

39. Fruit develops from monocarpellary, superior ovary ___.

a) Simple fruits b) Berry
c) Drupe d) Pepo **[Ans. (c)]**

40. Fruit develops from monocarpellary, superior ovary and dehisces along one suture.

a) Dry dehiscent fruit b) Follicle
c) Legume d) Siliqua **[Ans. (b)]**

41. The formation of false septum ____.

a) Silicula b) Replum
c) Septicidal d) Loculicidal **[Ans. (b)]**

42. Capsule splitting so that valves fall off leaving seeds attached to the central axis ___.

a) Septifragal b) Poricidal
c) Denticidal d) Circumscissile **[Ans. (a)]**

43. They develop from bicarpellary, unilocular, syncarpus, superior ovary with pericarp.

a) Samara b) Utricle
c) Cremocarp d) Carcerulus **[Ans. (b)]**

44. One seededsegments known as _____.

a) Nutlets b) Lomentum
c) Regma d) Sorosis **[Ans. (a)]**

45. They develop from tricarpellary, syncarpous, superior, trilocular ovary ___.

a) Nutlets b) Lomentum
c) Regma d) Sorosis **[Ans. (b)]**

5 TAXONOMY AND SYSTEMATIC BOTANY

EVALUATION

1. **Specimen derived from non-original collection serves as the nomenclatural type, when original specimen is missing. It is known as**
   a) Holotype b. Neotype
   c. Isotype d. Paratype **[Ans. (b)]**

2. **Phylogenetic classification is the most favoured classification because it reflects**
   a) Comparative Anatomy b. Number of flowers produced
   c. Comparative cytology d. Evolutionary relationships
   [Ans. (d)]

3. **The taxonomy which involves the similarities and dissimilarities among the immune system of different taxa is termed as**
   a. Chemotaxonomy b. Molecular systematics
   c. Serotaxonomy d. Numerical taxonomy **[Ans. (c)]**

4. **Which of the following is a flowering plant with nodules containing filamentous nitrogen fixing micro - organisms?**
   a. Crotalaria juncea b. Cycas revoluta
   c. Cicer arietinum d. Casuarina equisetifolia **[Ans. (a)]**

5. **Flowers are zygomorphic in**
   a. Ceropegia b. Thevetia
   c. Datura d. Solanum **[Ans. (d)]**

ADDITIONAL

6. **Taxonomic hierarchy was introduced by ____.**
   a) Davis and Heywood b) Simpson
   c) Carolus Linnaeus d) Stebbins **[Ans. (c)]**

7. **Wiley defined ___as an evolutionary species is a single lineage.**
   a) Morphological species b) Biological species
   c) Phylogenetic species d) Nomenclature **[Ans. (c)]**

8. **_____are known as common names.**
   a) Vernacular names b) Polynomial
   c) Binomial nomenclature d) Author citation **[Ans. (a)]**

9. **_____refers to valid name of the taxa accompanied by the author's name.**
   a) Vernacular names b) Polynomial
   c) Binomial nomenclature d) Author citation **[Ans. (d)]**

10. **A specimen or illustration originally cited by the author in protologue.**
    a) Single author b) Multiple authors
    c) Nomenclatural type d) Holotype **[Ans. (d)]**

11. **_____is a definitive reference source for identity.**
    a) Single author b) Multiple authors
    c) Nomenclatural type d) Holotype **[Ans. (d)]**

12. **Specimen selected from original material serves as a _____.**
    a) Holotype b) Isotype
    c) Lectotype d) Syntype **[Ans. (c)]**

13. **Specimen derived from non-original collection selected as _____.**
    a) Syntype b) Neotype
    c) Paratype d) Epitype **[Ans. (b)]**

14. **The most common type of key is a _____.**
    a) Dichotomous key b) Couplet
    c) Multi entry key d) Flora **[Ans. (a)]**

15. **_____is the document of all plant species in a given geographic area.**
    a) Dichotomous key b) Couplet
    c) Multi entry key d) Flora **[Ans. (d)]**

16. ____covers the entire continent.

a) Local flora b) Regional flora
c) Continental flora d) Electronic flora **[Ans. (c)]**

17. First modern botanical garden was established by ____.

a) Monograph b) Catalogues
c) Luca Ghini d) Herbaria **[Ans. (c)]**

18. ____ is situated in South West London.

a) Herbarium b) Voucher specimen
c) Kew Garden d) Classification **[Ans. (c)]**

19. _____outlined an artificial system of classification.

a) Father of Taxonomy
b) Carolus Linnaeus
c) Artificial system of classification
d) Natural system of classification **[Ans. (b)]**

20. ___considered the best was proposed by George Bentham and Joseph Dalton Hooker.

a) Father of Taxonomy
b) Carolus Linnaeus
c) Artificial system of classification
d) Natural system of classification **[Ans. (d)]**

21. Flowers having prominent disc shaped thalamus with superior ovary in ___.

a) Thalamiflorae b) Disciflorae
c) Calyciflorae d) Inferae **[Ans. (b)]**

22. The flowers are hypogynous, superior ovary and with more than two carpels in ____.

a) Heteromerae b) Bicarpellatae
c) Gymnospermae d) Monocotyledonae **[Ans. (a)]**

23. ____ was jointly proposed by Adolph Engler and Karl A. Prantl.

a) Phylogenetic system of classification
b) Chemotaxonomy

c) Biosystematics
d) Karyotaxonomy [Ans. (a)]

24. Various medicines, spices and preservatives obtained from plant in ___.
a) Phylogenetic system of classification
b) Chemotaxonomy
c) Biosystematics
d) Karyotaxonomy [Ans. (b)]

25. ____ is development of the discipline of immunology.
a) Serotaxonomy b) Molecular taxonomy
c) Phylogenetic tree d) RFLP [Ans. (a)]

26. ____is the branch of phylogeny that analyses hereditary molecular differences.
a) Serotaxonomy b) Molecular taxonomy
c) Phylogenetic tree d) RFLP [Ans. (b)]

27. ____is largely used for population genetics studies.
a) Amplified Fragment Length Polymorphism
b) Random Amplified Polymorphic DNA
c) DNA barcoding
d) Paul Hebert [Ans. (a)]

28. _____ is considered as 'Father of barcoding'.
a) Amplified Fragment Length Polymorphism
b) Random Amplified Polymorphic DNA
c) DNA barcoding
d) Paul Hebert [Ans. (d)]

29. ___is the basis for cataloguing and retrieving information about the tremendous diversity of flora.
a) Cladistics b) Cladogram
c) Taxonomic aids d) Classification [Ans. (d)]

30. _____ is called as Pea family.
a) Fabaceae b) Stipitate
c) Lomentum d) Cosmopolitan [Ans. (a)]

31. What is the habit of Crotolariain Fabaceae?
a) Herb b) Prostrate
c) Erect d) Shrub **[Ans. (a)]**

32. What is the habit of Clitoriain Fabaceae?
a) Small trees b) Climbers
c) Large tree d) Woody climber **[Ans. (b)]**

33. What is the leaf of Crotalaria junceain Fabaceae?
a) Pith plant b) Rhizobium leguminosarum
c) Woody d) Unifoliate **[Ans. (d)]**

34. What is the Inflorescence of Clitoria ternateain Fabaceae?
a) Axillary solitary b) Bracteolate
c) Stamens d) Dimorphic **[Ans. (a)]**

35. The characteristic fruit of Fabaceae is a ___ Pisum sativum.
a) Legume b) Lomentum
c) Geocarpic d) Non-endospermic **[Ans. (a)]**

36. What is the habit of Solanum trilobatum in Solanaceae?
a) Solanaceae b) Small trees
c) Lianas with prickles d) Vines **[Ans. (c)]**

37. What is the leaf of Solanum tuberosum in Solanaceae?
a) Tubers b) Pinnately compound
c) Rhiphidium d) Umbellate cyme **[Ans. (b)]**

38. What is the Corolla of Solanum?
a) Bracteate b) Ebracteate
c) Physalis d) Tubular **[Ans. (d)]**

39. What is the Androecium in Salpi glossis?
a) Didynamous b) Berry
c) Capsule d) Endospermous **[Ans. (a)]**

40. What is the habit of Colchicum?
a) Liliaceae b) Polygonatum
c) Bulb d) Corm **[Ans. (d)]**

41. What is the stem modification of Ruscus?

a) Trees b) Erect
c) Climbing d) Phylloclades **[Ans. (d)]**

42. Inflorescence of huge terminal panicle in _____.

a) Ruscus b) Similax
c) Yucca d) Aloe **[Ans. (c)]**

43. What is the flower of Lilium?

a) Axillary b) Terminal
c) Unisexual d) Zygomorphic **[Ans. (d)]**

44. Stamens are 4 in ____.

a) Paris quadrifolia b) Syntepalous
c) Ruscus d) Maianthemum **[Ans. (d)]**

45. The ovary is___ in Haemodorum.

a) Synstamenous b) Inferior
c) Berry d) Scapigerous **[Ans. (b)]**

6 CELL: THE UNIT OF LIFE

EVALUATION

1. **The two subunits of ribosomes remain united at critical ion level of**

   a. Magnesium b. Calcium
   c. Sodium d. Ferrous **[Ans. (a)]**

2. **Sequences of which of the following is used to know the phylogeny**

   a. mRNA b. rRNA
   c. tRNA d. Hn RNA **[Ans. (b)]**

3. **Many cells function properly and divide mitotically even though they do not have**

   a. plasma membrane b. cytoskeleton
   c. mitochondria d. plastids **[Ans. (d)]**

4. **Keeping in view the fluid mosaic model for the structure of cell membrane, which one of the following statements is correct with respect to the movement of lipids and proteins from one lipid monolayer to the other**

   a. Neither lipid nor proteins can flip-flop
   b. Both lipid and proteins can flip flop
   c. While lipids can rarely flip-flop proteins cannot
   d. While proteins can flip-flop lipids cannot **[Ans. (c)]**

5. **Match the columns and identify the correct option:**

Column – I	Column-II
A) Thylakoids	-(i) Disc shaped sacs in golgi apparatus
B) Cristae	-(ii) Condensed structure of DNA
C) Cisternae	-(iii) Flat membranous sacs in stroma
D) Chromatin	- (iv) Infoldings in mitochondria

	A	B	C	D
1)	(iii)	(iv)	(ii)	(i)
2)	(iv)	(iii)	(i)	(ii)
3)	(iii)	(iv)	(i)	(ii)
4)	(iii	(i)	(iv)	(ii)

[Ans. (3)]

ADDITIONAL

6. _____ observed as 'cell' from the cork tissue in 1665.

a) Aristotle b) Robert Hooke
c) Leeuwenhoek d) Robert Brown **[Ans. (b)]**

7. _____ described the spherical body in the plant cells as nucleus.

a) Aristotle b) Robert Hooke
c) Leeuwenhoek d) Robert Brown **[Ans. (d)]**

8. Compound microscope was invented by_____.

a) Z. Jansen b) Compound microscope
c) Microscope d) Bright field microscope
[Ans. (a)]

9. _____works on the principle of numerical aperture value.

a) Z. Jansen b) Compound microscope
c) Microscope d) Bright field microscope
[Ans. (d)]

10. The field will be dark but object will be glistening _____.

a) Primary magnification b) Secondary magnification
c) Dark Field Microscope d) Patch stop **[Ans. (c)]**

11. _____is fixed inside the eye piece lens.

a) Phase Contrast Microscope
b) Micrometry
c) Ocular Micrometer
d) Stage Micrometer **[Ans. (c)]**

12. _____is a slide with a line divided into 100 units.

a) Microscope b) Micrometry
c) Ocular Micrometer d) Stage Micrometer **[Ans. (d)]**

13. ___is used in the cells cultured invitro during mitosis.
a) Phase Contrast Microscope
b) Micrometry
c) Ocular Micrometer
d) Stage Micrometer [Ans. (a)]

14. _____ was developed by G. Binning and H. Roher.
a) Electron Microscope b) Compound Microscope
c) Dissection Microscope d) All of these [Ans. (a)]

15. _____are the exception to cell theory.
a) Cell theory b) Prions
c) Tracheids d) Horny cells [Ans. (b)]

16. Solutes may be _____soluble in water which forms the basis for its colloidal nature.
a) Protoplasm b) Homogeneous
c) Heterogeneous d) Gel [Ans. (b)]

17. The protoplasm exists in liquid state called _____.
a) Sol b) Solation
c) Gelation d) Protoplasm [Ans. (a)]

18. _____is translucent, odourless and polyphasic fluid.
a) Sol b) Solation
c) Gelation d) Protoplasm [Ans. (d)]

19. Approximately ____are present in protoplasm.
a) Viscosity b) Refractive index
c) 34 elements d) Bad conductor [Ans. (c)]

20. _____ that hold long chains of molecules together.
a) Cohesiveness b) Van der Waal's bonds
c) Contractility d) Surface tension [Ans. (b)]

21. Organisms with primitive nucleus are called as _____.
a) Prokaryotes b) Histone
c) Mesokaryotes d) Eukaryotes [Ans. (a)

22. Membrane bound organelles are present _____.

a) Prokaryotes b) Histone
c) Mesokaryotes d) Eukaryotes **[Ans. (d)]**

23. _____are surrounded by cell membrane.

a) Endosymbiont theory b) Animal cells
c) Plant cell d) Protoplasm **[Ans. (b)]**

24. _____ is the outermost protective cover of cell.

a) Cell wall b) Primary wall
c) Secondary wall d) Middle lamellae **[Ans. (a)]**

25. _____ is an actively growing portion.

a) Cell wall b) Primary wall
c) Secondary wall d) Middle lamellae **[Ans. (a)]**

26. _____ is the outermost layer made up of calcium and magnesium pectate.

a) Cell wall b) Primary wall
c) Secondary wall d) Middle lamellae **[Ans. (d)]**

27. The cell membrane is also called _____.

a) Plasmodesmata b) Pit membrane
c) Cell surface d) Cytosol **[Ans. (c)]**

28. Jonathan Singer and Garth Nicolson (1972) proposed _____.

a) Fluid mosaic model b) Pit membrane
c) Endocytosis d) Exocytosis **[Ans. (a)]**

29. _____ activates second messenger.

a) Signal transduction b) Cytoplasm
c) Endomembrane system d) Endoplasmic reticulum
[Ans. (a)]

30. ___ described as non-nuclear content of protoplasm.

a) Signal transduction
b) Cytoplasm
c) Endomembrane system
d) Endoplasmic reticulum **[Ans. (b)]**

31. ____ is evolved from the inward growth of cell membrane.

a) Signal transduction b) Cytoplasm
c) Endomembrane system d) Endoplasmic reticulum **[Ans. (c)]**

32. ___are oval membrane bound vacuolar structure.

a) Cisternae
b) Vesicles
c) Tubules
d) Rough Endoplasmic Reticulum **[Ans. (b)]**

33. ____ are irregular shape, branched, smooth walled, enclosing a space.

a) Cisternae
b) Vesicles
c) Tubules
d) Rough Endoplasmic Reticulum **[Ans. (c)]**

34. ____was first observed by A. Kolliker.

a) Golgi bodies b) Mitochondria
c) Mitochondrial DNA d) Chloroplasts **[Ans. (b)]**

35. ____the presence of DNA it is semi-autonomous organelle.

a) Golgi bodies b) Mitochondria
c) Mitochondrial DNA d) Chloroplasts **[Ans. (b)]**

36. ____mutates 5 to 10 time faster than DNA in the nucleus.

a) Golgi bodies b) Mitochondria
c) Mitochondrial DNA d) Chloroplasts **[Ans. (c)]**

37. ____are the sites of lipid synthesis.

a) Smooth Endoplasmic Reticulum
b) Thylakoids
c) Granum
d) Quantosomes **[Ans. (a)]**

38. _____were first observed by George Palade.

a) Ribosomes b) Lysosomes
c) Intracellular digestion d) Autophagy **[Ans. (a)]**

39. Many___are attached to the single mRNA is called polysomes.

a) Ribosomes b) Lysosomes
c) Intracellular digestion d) Autophagy **[Ans. (a)]**

40. _____are found in eukaryotic cell.

a) Ribosomes b) Lysosomes
c) Intracellular digestion d) Autophagy **[Ans. (b)]**

41. Lysosome causes self-destruction of cell on insight of disease they destroy the cells.

a) Autolysis b) Phagocytosis
c) Exocytosis d) Peroxisomes **[Ans. (a)]**

42. _____are small spherical bodies and single membrane bound organelle.

a) Autolysis b) Phagocytosis
c) Exocytosis d) Peroxisomes **[Ans. (d)]**

43. In plants, leaf cells have many _____.

a) Autolysis b) Phagocytosis
c) Exocytosis d) Peroxisomes **[Ans. (d)]**

44. Eukaryotic cells contain many enzyme bearing membranes called _____.

a) Glyoxysome b) Microbodies
c) Sphaerosome d) Centrioles **[Ans. (b)]**

45. _____form the basal body of cilia or flagella and spindle fibers which forms the spindle apparatus in animal cells.

a) Glyoxysome b) Microbodies
c) Sphaerosome d) Centrioles **[Ans. (d)]**

46. The major function of plant vacuole is to maintain water pressure known as ___.

a) Vacuoles
b) Anthocyanin
c) Turgor pressure
d) Cell inclusions **[Ans. (c)]**

47. ___is an important unit of cell which control all activities of the cell.

a) Sulphur granules b) Nucleus
c) Pore complex d) Perinuclear space **[Ans. (b)]**

48. The space between two nuclear membranes is called ____.

a) Sulphur granules b) Nucleus
c) Pore complex d) Perinuclear space **[Ans. (d)]**

49. ____ribosomal biogenesis takes place.

a) Chromosome b) Euchromatin
c) Heterochromatin d) Nucleolus **[Ans. (d)]**

50. The term _____was introduced by Waldeyer in 1888.

a) Chromosome b) Euchromatin
c) Heterochromatin d) Nucleolus **[Ans. (a)]**

51. Nucleoli develop from these secondary constrictions are called___.

a) Constrictions b) Primary constriction
c) Monocentric d) Nucleolar organizers **[Ans. (d)]**

52. The centromere contains a complex system of protein fibres called____.

a) Satellite b) Kinetochore
c) Polycentric d) Sister chromatids **[Ans. (b)]**

53. _____centromere subterminal, L –shaped chromosomes.

a) Telocentric
b) Acrocentric
c) Sub metacentric
d) Metacentric **[Ans. (c)]**

54. __have centromere activity distributed along the whole surface of the chromosome.

a) Holocentric chromosomes
b) Point centromere
c) Localized centromere
d) Regional centromere **[Ans. (a)]**

55. ____observed in the salivary glands of Drosophila.

a) Polytene chromosomes b) Lampbrush chromosomes
c) Flagellin d) Eukaryotic Flagella **[Ans. (a)]**

56. ___occur at the diplotene stage.

a) Polytene chromosomes
b) Lampbrush chromosomes
c) Flagellin
d) Eukaryotic Flagella **[Ans. (b)]**

57. ___images of structures observed through microscopes can be further magnified.

a) Cilia b) Squash
c) Microphotograph d) Histochemistry **[Ans. (c)]**

58. The technique of staining the cells and tissue is called ___.

a) Cilia b) Squash
c) Microphotograph d) Histochemistry **[Ans. (d)]**

7 CELL CYCLE

EVALUATION

1. **The correct sequence in cell cycle is**
   a. S-M-G1-G2 b. S-G1-G2-M
   c. G1-S-G2-M d. M-G-G2-S **[Ans. (c)]**

2. **If mitotic division is restricted in G1 phase of the cell cycle then the condition is known as**
   a. S Phase b. G2 Phase
   c. M Phase d. G_0 Phase **[Ans. (d)]**

3. **Anaphase promoting complex APC is a protein degradation machinery necessary for proper mitosis of animal cells. If APC is defective in human cell, which of the following is expected to occur?**
   a. Chromosomes will be fragmented
   b. Chromosomes will not condense
   c. Chromosomes will not segregate
   d. Recombination of chromosomes will occur **[Ans. (c)]**

4. **In S phase of the cell cycle**
   a. Amount of DNA doubles in each cell
   b. Amount of DNA remains same in each cell
   c. Chromosome number is increased
   d. Amount of DNA is reduced to half in each cell **[Ans. (a)]**

5. **Centromere is required for**
   a. transcription
   b. crossing over
   c. Cytoplasmic cleavage
   d. movement of chromosome towards pole **[Ans. (d)]**

6. Synapsis occur between

a. mRNA and ribosomes
b. spindle fibres and centromeres
c. two homologous chromosomes
d. a male and a female gamete **[Ans. (c)]**

7. In meiosis crossing over is initiated at

a. Diplotene b. Pachytene
c. Leptotene d. Zygotene **[Ans. (b)]**

8. Colchicine prevents the mitosis of the cells at which of the following stage

a. Anaphase b. Metaphase
c. Prophase d. interphase **[Ans. (b)]**

9. The paring of homologous chromosomes on meiosis is known as

a. Bivalent b. Synapsis
c. Disjunction d. Synergids **[Ans. (b)]**

10. Anastral mitosis is the characteristic feature of

a. Lower animals b. Higher animals
c. Higher plants d. All living organisms **[Ans. (c)]**

ADDITIONAL

11. Match the following.

A) Robert Hooke	- i) Chromosome behaviour
B) Anton Van Leeuwenhoek	- ii) Cell theory
C) Robert Brown	- iii) Structure of bacteria
D) Walther Flemming	- iv) Presence of nucleus
E) Schleiden& Schwann	- v) Cell

a) A – i), B – ii), C – iii), D – iv), E – v)
b) A – v), B – iii), C – iv), D – i), E – ii)
c) A – i), B – ii), C – iii), D – iv), E – v)
d) A – v), B – iv), C – iii), D – ii), E – i) **[Ans. (b)]**

12. Chromosome contains a short, constricted region called___.

a) Centromere b) Homologous pairs
c) Chromatids d) Haploid state **[Ans. (a)]**

13. The two identical structures formedare called _____.

a) Nucleus b) Centromere
c) Chromatids d) Cytokinesis **[Ans. (c)]**

14. Cell cycle was discovered by _____.

a) Cell cycle b) Prevost and Dumans
c) Eukaryotic cell d) Interphase **[Ans. (b)]**

15. In cell cycle _____is spent for interphase.

a) 95% b) An hour
c) 11 hours d) 8 hours **[Ans. (a)]**

16. In cell cycle of a proliferating human cell, M - phase time duration is ___.

a) 4 hours b) 1 hour
c) Interphase d) C-Value **[Ans. (b)]**

17. ___activate genes.

a) Kinases b) Cyclins
c) G0 phase d) Histones **[Ans. (b)]**

18. The centrioles duplicate in the_____.

a) Cyclins b) Cytoplasm
c) Tubulin d) Microtubles **[Ans. (b)]**

19. Amitosis is also called direct or ___.

a) Maturation Promoting Factor
b) Incipient cell division
c) Karyokinesis
d) Cytokinesis **[Ans. (b)]**

20. ___ can lead to abnormalities in metabolism and reproduction.

a) Amitosis b) Mitosis
c) Closed Mitosis d) Open Mitosis **[Ans. (a)]**

21. In ____ the nuclear envelope breaks down and then reforms around the 2 sets.

a) Amitosis b) Mitosis
c) Closed Mitosis d) Open Mitosis **[Ans. (d)]**

22. Nuclear envelope breaks down in ____.

a) Prophase b) Metaphase
c) Anaphase d) Telophase **[Ans. (a)]**

23. ____ the spindle fibres is made up of tubulin.

a) Prophase b) Metaphase
c) Anaphase d) Telophase **[Ans. (b)]**

24. ___ each chromosome split simultaneously and two daughter chromatids begins to migrate.

a) Prophase b) Metaphase
c) Anaphase d) Telophase **[Ans. (c)]**

25. In plants, phragmoplast are formed between the daughter cells in ____.

a) Prophase b) Metaphase
c) Anaphase d) Telophase **[Ans. (d)]**

26. Aubiquitine ligase is activated called as the ____.

a) Metaphase plate
b) Kinetochore
c)Anaphase-promoting complex cyclosome
d) Anaphase promoting complex **[Ans. (c)]**

27. ____ first stage of cell wall construction is a line dividing the newly forming cells.

a) Cytokinesis b) Cell plate
c) Genetic stability d) Repair of tissues **[Ans. (b)]**

28. ____ takes place in the reproductive organs.

a) Meiosis b) Microsporogenesis
c) Megasporogenesis d) Genetic variation **[Ans. (a)]**

29. In flowering plants meiosis occurs during____ in ovule.

a) Meiosis b) Microsporogenesis
c) Megasporogenesis d) Genetic variation **[Ans. (c)]**

30. Condensation of chromosomes takes place in ___.

a) Leptotene b) Zygotene
c) Pachytene d) Diplotene **[Ans. (a)]**

31. Recombination of homologous chromosomes is completed by the end of the stage __.

a) Leptotene b) Zygotene
c) Pachytene d) Diplotene **[Ans. (c)]**

32. Terminalisation of chiasmata in _____.

a) Chiasmata b) Lampbrush chromosome
c) Diakinesis d) Metaphase plate **[Ans. (c)]**

33. Random distribution of homologous chromosomes in a cell in Metaphase I is ____.

a) Independent assortment b) Anaphase I
c) Telophase I d) Meiosis II **[Ans. (a)]**

34. Haploid set of chromosomes are present at each pole in _____.

a) Independent assortment c) Telophase I
c) Telophase I d) Meiosis II **[Ans. (c)]**

35. Nucleolus reappears in _____.

a) Independent assortment b) Anaphase I
c) Telophase I d) Meiosis II **[Ans. (c)]**

36. Chromosome arranged at the equatorial plane of the spindle in _____.

a) Prophase II b) Metaphase II
c) Anaphase II d) Telophase II **[Ans. (b)]**

37. ___ leads to genetic variability.

a) Meiosis b) Mitogen
c) Mitotic poisons d) Endomitosis **[Ans. (a)]**

38. _____ increases mitotic rate.

a) Meiosis b) Mitogen
c) Mitotic poisons d) Endomitosis **[Ans. (b)]**

39. No spindle formation is in _____.

a) Meiosis b) Mitogen
c) Mitotic poisons d) Endomitosis **[Ans. (d)]**

40. _____ is present only in plant cells.

a) Anastral b) Amphiastral
c) Mitosis d) Meiosis **[Ans. (a)]**

41. _____ is found in animal cells.

a) Anastral b) Amphiastral
c) Mitosis d) Meiosis **[Ans. (b)]**

42. Four daughter cells are formed in ___.

a) Anastral b) Amphiastral
c) Mitosis d) Meiosis **[Ans. (d)]**

8 BIOMOLECULES

EVALUATION

1. The most basic amino acid is

a. Arginine b. Histidine
c. Glycine d. Glutamine **[Ans. (a)]**

2. An example of feedback inhibition is

a Cyanide action on cytochrome
b. Sulpha drug on folic acid synthesiser bacteria
c. Allosteric inhibition of hexokinase by glucose-6-phosphate
d. The inhibition of succinic dehydrogenase by malonate
[Ans. (c)]

3. Enzymes that catalyse interconversion of optical, geometrical or positional isomers are

a. Ligases b. Lyases
c. Hydrolases d. Isomerases **[Ans. (d)]**

4. Proteins perform many physiological functions. For example, some functions as enzymes. One of the following represents an additional function that some proteins discharge:

a. Antibiotics
b. Pigment conferring colour to skin
c. Pigments making colours of flowers
d. Hormones **[Ans. (d)]**

5. Given below is the diagrammatic representation of one of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown & one blank component "X" in it

Category	Compound
a) Cholesterol	Guanine
b) Amino acid	NH2

c) Nucleotide Adenine
d) Nucleoside Uracil [**Ans. (d)**]

ADDITIONAL

6. _____is a tiny polar molecule.
a) Water b) Hydrogen
c) Organic compounds d) Primary metabolites [**Ans. (a)**]

7. Organic components are called as ___which are intermediates.
a) Water b) Metabolites
c) Secondary metabolites d) Organic molecules [**Ans. (b)**]

8. All macromolecules except lipids are formed by the process of _____.
a) Macromolecules b) Polymerisation
c) Polymers d) Carbohydrate [**Ans. (b)**]

9. Lipids are not formed by the process of _____.
a) Macromolecules b) Polymerisation
c) Polymers d) Carbohydrate [**Ans. (b)**]

10. Some are aldehydes, like glucose and are referred as as_____.
a) Carbohydrate b) Monosaccharides
c) Ketoses d) Disaccharides [**Ans. (c)**]

11. Hydrolysis reaction involves addition of a water molecule and splitting of the ____.
a) Disaccharides b) Hydrolysis
c) Glycosidic bond d) Polysaccharides [**Ans. (c)**]

12. ____ also called "Glycans".
a) Disaccharides b) Hydrolysis
c) Glycosidic bond d) Polysaccharides [**Ans. (d)**]

13. ___ is removal of water.
a) Polysaccharide b) Glycosidic bond
c) Cellulose d) Starch [**Ans. (b)**]

14. ___is also a storage polysaccharide otherwise called as animal starch.

a) Glycogen b) Cellulose
c) Glycosidic d) Chitin **[Ans. (a)]**

15. _____ is absent in brain.

a) Glycogen b) Cellulose
c) Glycosidic d) Chitin **[Ans. (a)]**

16. _____fibres are straight and uncoiled.

a) Glycogen b) Cellulose
c) Glycosidic d) Chitin **[Ans. (b)]**

17. _____ is called as N-acetyl glucosamine.

a) Glycogen b) Cellulose
c) Glycosidic d) Chitin **[Ans. (d)]**

18. _____is not a reducing sugar

a) Reducing sugars b) Benedict's test
c) Blue d) Sucrose **[Ans. (d)]**

19. In saturated fatty acids the hydrocarbon chain is _____.

a) Hydrophobic b) Triglycerides
c) Fatty acids d) Single bonded **[Ans. (d)]**

20. ___ are commonly found in cell membrane and animal hormones.

a) Phospholipids b) Alcohol
c) Selective permeability d) Steroids **[Ans. (d)]**

21. The term protein was coined by _____.

a) Cholesterol b) Waxes
c) Proteins d) Gerardus Johannes Mulder **[Ans. (d)]**

22. A zwitterion also called as _____.

a) Amino acids b) Amphoteric
c) Dipolar ion d) Isoelectric point **[Ans. (c)]**

23. Two amino acids can react together with the loss of water to form a ___.

a) Peptide bond b) Dipeptide
c) Polypeptides d) Insulin protein **[Ans. (b)]**

24. In 1953 Fred Sanger first sequenced the ___.

a) Peptide bond b) Dipeptide
c) Polypeptides d) Insulin protein **[Ans. (d)]**

25. ____ causes the amino acid chain to twist into coiled configuration called α-helix.

a) 3D b) Primary structure
c) Secondary structure d) Tertiary structure **[Ans. (c)]**

26. ____ serve as catalyst for chemical reactions in cell.

a) Quaternary structure b) Subunits
c) Enzymes d) Antibodies **[Ans. (c)]**

27. _____ is the loss of 3D structure of protein.

a) Denaturation b) Hydrogen bond
c) Ionic bond d) Hydrophobic bond **[Ans. (a)]**

28. ____ are globular proteins.

a) Enzymes b) Anabolic
c) Catabolic d) RUBISCO **[Ans. (a)]**

29. ____ may compete to occupy the active site of enzyme.

a) Activation energy b) Inhibitors
c) Competitive inhibitors d) Non – competitive inhibitors **[Ans. (c)]**

30. ___ is the inactive enzyme without its non-protein component.

a) Holoenzyme b) Apoenzyme
c) Inorganic ions d) Coenzymes **[Ans. (b)]**

31. ___ are organic molecules that assist in catalytic function of an enzyme.

a) Prosthetic groups b) Catalytic RNA
c) Telomerase d) Terminal transferase **[Ans. (a)]**

32. Match the following.

A) Oxaloreductase	-i) ATP as a source of energy
B) Transferase	- ii) Break chemical bond
C) Hydrolases	- iii) Conversion of isomer
D) Isomerase	- iv) Addition of water molecule
E) Lyase	- v) Transfer a group of atoms
F) Ligase	- vi) Redox reaction

a) A – i), B – ii), C – iii), D – iv), E – v), F – vi)
b) A – vi), B – v), C – iv), D – iii), E – ii), F – i)
c) A – i), B – iii), C – ii), D – iv), E – vi), F – v)
d) A – vi), B – ii), C – iii), D – iv), E – v), F – i) **[Ans. (b)]**

33. Match the following.

A) Friedrich Miescher	- i) Vice versa of base pairs
B) Maurice Wilkins	- ii) DNA right double helix
C) Rosalind Franklin	-iii) Supporting crystallographic
D) Watson and Crick	-iv) Evidence for crystallographic
E) Erwin Chargaff	- v) Nuclein

a) A – i), B – ii), C – iii), D – iv), E – v)
b) A – i), B – iii), C – ii), D – iv), E – v)
c) A – v), B – iv), C – iii), D – ii), E – i)
d) A – v), B – iii), C – iv), D – ii), E – i) **[Ans. (d)]**

34. ____is a polymeric molecule essential in various biological roles.

a) Ribonucleic acid b) messenger RNA
c) Prokaryotic mRNA d) transfer RNA **[Ans. (a)]**

35. ___ include simple sugars.

a) ribosomal RNA b) Carbohydrates
c) Lipids d) Nucleic acids **[Ans. (b)]**

36. ____ are the principle information molecules of the cell.

a) ribosomal RNA b) Carbohydrates
c) Lipids d) Nucleic acids **[Ans. (d)]**

9 TISSUE AND TISSUE SYSTEM

EVALUATION

1. Refer to the given figure and select the correct statement

(i) A, B, and C are histogen of shoot apex
(ii) A Gives rise to medullary rays.
(iii) B Gives rise to cortex
(iv) C Gives rise to epidermis

a. i and ii only b. i and iii only
c. i and iii only d. iii and iv only **[Ans : (c)]**

2. Read the following sentences and identify the correctly matched sentences.

(i) In exarch condition, the protoxylem lies outside of metaxylem.
(ii) In endarch condition, the protoxylem lie towords the centre.
(iii) In centarch condition, metaxylem lies in the middle of the protoxylem.
(iv) In mesarch condition, protoxylem lies in the middle of the metaxylem.

a. i, ii and iii only b. ii, iii and iv only
c. i, ii and iv only d. All of these **[Ans : (c)]**

1. In Gymnosperms, the activity of sieve cells are controlled by

a. Nearby sieve tube members.
b. Phloem parenchyma cells
c. Nucleus of companion cells.
d. Nucleus of albuminous cells. **[Ans : (d)]**

2. When a leaf trace extends from a vascular bundle in a dicot stem, what would be the arrangement of vascular tissues in the veins of the leaf?

a. Xylem would be on top and the phloem on the bottom

b. Phloem would be on top and the xylem on the bottom
c. Xylem would encircle the phloem
d. Phloem would encircle the xylem [**Ans : (a)**]

3. Grafting is successful in dicots but not in monocots because the dicots have
a. Vascular bundles arranged in a ring
b. Cambium for secondary growth
c. Vessels with elements arranged end to end
d. Cork cambium [**Ans : (b)**]

ADDITIONAL

4. Meristematic cells are _____.
a. Meristem b. Isodiametric
c. Self - perpetuating d. Anatomists [**Ans : (c)**]

5. _____ is present opposite to the shoot apex.
a. The tunica b. The corpus
c. Root apex d. Apical cell theory [**Ans : (c)**]

6. It gives rise to root cap.
a. Calyptrogen b. Korperkappe
c. Korper zone d. Kappe zone [**Ans : (a)**]

7. _____ was proposed by Clowes (1961) to explain root apical meristem activity.
a. Inverted b. Straight
c. Quiescent centre d. Quiescent centre concept
[**Ans : (d)**]

8. The _____ develop from apical meristem.
a. Permanent tissues b. Simple permanent tissues
c. Parenchyma d. Cellulose [**Ans : (a)**]

9. It is absent in the roots and also occurs in petioles and pedicels.
a. Idioblasts b. Collenchyma
c. Angular collenchyma d. Lacunar collenchyma [**Ans : (b)**]

10. _____ consists of narrow cells.

a. Idioblasts b. Collenchyma
c. Angular collenchyma d. Lacunar collenchyma **[Ans : (b)]**

11. Tannin maybe present in _____.

a. Idioblasts b. Collenchyma
c. Angular collenchyma d. Lacunar collenchyma **[Ans : (b)]**

12. _____ are dead cells, usually these are isodiametric but some are elongated too.

a. Lamellar collenchyma b. Annular collenchyma
c. Sclerenchyma d. Sclereids **[Ans : (d)]**

13. Rod shaped with dilated ends.

a. Stone cells b. Macrosclereids
c. Osteosclereids d. Astrosclereids **[Ans : (c)]**

14. _____ are very much elongated sclerenchyma cells with pointed tips.

a. Trichosclereids b. Filiformsclereids
c. Fibres d. Xylary fibres **[Ans : (c)]**

15. The sclereids are present in the leaf lamina of Olea europaea.

a. Trichosclereids b. Filiformsclereids
c. Fibres d. Xylary fibres **[Ans : (b)]**

16. These are shorter than the libriform fibres with moderate secondary thickenings in the cell walls.

a. Libriform fibres b. Fibre tracheids
c. Septate fibres d. Gelatinous fibres **[Ans : (b)]**

17. Natural _____ are strong and cellulosic.

a. Bast fibres b. Surface fibres
c. Mesocarp fibres d. Leaf fibres **[Ans : (a)]**

18. Sisal, Coconut, Pineapple, Abaca are examples for _____.

a. Surface fibres b. Soft fibres
c. Hard fibres d. Brush fibres **[Ans : (c)]**

19. Cotton is an example for ____.

a. Surface fibres b. Soft fibres
c. Hard fibres d. Brush fibres **[Ans : (a)]**

20. The ____ is the principal water conducting tissue in a vascular plant.

a. Xylem b. Phloem
c. Tracheids d. Trachea **[Ans : (a)]**

21. ____ is called leptome.

a. Xylem b. Phloem
c. Tracheids d. Trachea **[Ans : (b)]**

22. _____ are the conducting elements of the phloem.

a. Xylem fibres b. Xylem parenchyma
c. Phloem d. Sieve elements **[Ans : (d)]**

23. The parenchyma cells associated with the phloem are called ____.

a. Sieve cells b. Sieve tubes
c. Companion cells d. Phloem parenchyma **[Ans : (d)]**

24. A group of tissues performing a similar function, irrespective of its position in the plant body, is called a ____.

a. Tissue system b. Epidermal tissue system
c. Ground tissue system d. Vascular tissue system **[Ans : (a)]**

25. _____ is the outer most covering of plants.

a. Epidermal tissue system b. Root epidermis
c. Stem epidermis d. Leaf epidermis **[Ans : (a)]**

26. The guard cells contain chloroplasts, whereas the other epidermal cells normally do not have them.

a. Epidermal tissue system b. Root epidermis
c. Stem epidermis d. Leaf epidermis **[Ans : (d)]**

27. Stomata are minute pores surrounded by two guard cells.

a. Subsidiary cells b. Sunken stomata
c. Multiseriate epidermis d. Epidermal outgrowth **[Ans : (a)]**

28. ___ may be branched or unbranched and are one or more one celled thick.

a. Trichomes b. Trichoblasts
c. Prickles d. Glandular hairs **[Ans : (a)]**

29. ____ repel herbivorous animals.

a. Trichomes b. Trichoblasts
c. Prickles d. Glandular hairs **[Ans : (d)]**

30. The ground tissues present outside the stele is called _____.

a. Fundamental tissue system
b. Parenchymatous tissue
c. Extra-stelar ground tissue
d. Intra-stelar ground tissues **[Ans : (c)]**

31. The ____ occurs between the epidermis and pericycle.

a. Hypodermis b. Cortex
c. Chlorenchyma d. Aerenchymatous **[Ans : (b)]**

32. The cells of endodermis like layer had living cells containing starch grains. Hence it is known as ____.

a. Endodermis b. Starch sheath
c. Passage cells d. Pericycle **[Ans : (b)]**

33. ___ is single or few layered parenchymatous found inner to the endodermis.

a. Endodermis b. Starch sheath
c. Passage cells d. Pericycle **[Ans : (d)]**

34. The stems of both groups have an eustele while roots are _____.

a. Vascular tissue system
b. Vascular bundles
c. Protostele
d. Interfascicular region **[Ans : (c)]**

35. Metaxylem vessels are generally ____ in shape.

a. Epiblema b. Cortex
c. Exarch d. Polygonal **[Ans : (d)]**

36. The main function of _____ in the endodermal cells is to prevent the re-entry of water into the cortex once water entered the xylem tissue.

a. Epiblema b. Casparian strips
c. Epidermis d. Cutin **[Ans : (b)]**

37. The central part of the stem inner to the endodermis is known as _____.

a. Stele b. Endodermis
c. Hard bast d. Cambium **[Ans : (a)]**

38. This patch of sclerenchyma cell is called Bundle cap or _____.

a. Stele b. Endodermis
c. Hardbast d. Cambium **[Ans : (c)]**

39. The leaf of dicot leaf is generally _____.

a. Pith b. Skull
c. Dorsiventral d. Guard cells **[Ans : (c)]**

40. Vascular bundles are surrounded by a compact layer of parenchymatous cells called _____.

a. Respiratory cavity b. Bundle sheath
c. Hydathode d. Halophiles **[Ans : (b)]**

10 SECONDARY GROWTH

EVALUATION

1. Consider the following statements in spring season vascular cambium

(i) is less active
(ii) produces a large number of xylary elements
(iii) forms vessels with wide cavities of these,

a. (i) is correct but (ii) and (iii) are not correct
b. (i) is not correct but (ii) and (iii) are correct
c. (i) and (ii) are correct but (iii) is not correct
d. (i) and (ii) are not correct but (iii) is correct **[Ans : (b)]**

2. Usually, the monocotyledons do not increase their girth, because

a. They possess actively dividing cambium
b. They do not possess actively dividing cambium
c. Ceases activity of cambium
d. All are correct **[Ans : (b)]**

3. In the diagram of lenticel identify the parts marked as A, B, C, D.

a. A. phellem, B. Complementary tissue, C. Phelloderm, D. Phellogen.
b. A. Complementary tissue, B. Phellem, C. Phellogen, D. Phelloderm.
c. A. Phellogen, B. Phellem, C. Phelloderm, D. complementary tissue
d. Phelloderm, B. Phellem, C. Complementary tissue, D. Phellogen

[Ans : (a)]

1. The common bottle cork is a product of

a. Phellem b. Phellogen
c. Xylem d. Vascular cambium **[Ans : (b)]**

2. What is the fate of primary xylem in a dicot stem showing extensive secondary growth?

a. It is retained in the center of the axis
b. It gets crushed
c. May or may not get crushed
d. It gets surrounded by primary phloem **[Ans : (a)]**

ADDITIONAL

3. The ____ is the lateral meristem that produces the secondary vascular tissues.

a. Vascular cambium b. Cambial strip
c. Interfascicular cambium d. Vascular Cambial ring **[Ans : (a)]**

4. They give rise to the longitudinal or axial system of the secondary xylem and phloem____.

a. Fusiform initials b. Non – stratified cambium
c. Storied cambium d. Ray initials **[Ans : (a)]**

5. Whereas in plants with long fusiform initials, they strongly overlap at the ends, and this type of cambium is called _____.

a. Fusiform initials b. Non – stratified cambium
c. Storied cambium d. Ray initials **[Ans : (b)]**

6. Due to the continued formation of secondary xylem and phloem through ___, both the primary xylem and phloem get gradually crushed.

a. Vascular cambial activity b. Secondary xylem
c. Porous wood d. Non – porous wood **[Ans : (a)]**

7. The gymnosperm wood, which lacks vessels is known as ____.

a. Vascular cambial activity b. Secondary xylem
c. Porous wood d. Non – porous wood **[Ans : (d)]**

8. The ___ is under the control of many physiological and environmental factors.

a. Vascular cambial activity b. Spring wood
c. Autumn wood d. Growth rings **[Ans : (a)]**

9. In winter, the cambium is less active and forms fewer xylary elements that have narrow vessels/ tracheids and this wood is called ____.

a. Vascular cambial activity b. Spring wood
c. Autumn wood d. Growth rings **[Ans : (c)]**

10. The determination of the age of a tree by counting the annual rings is called _.

a. Pseudo – annual rings b. Dendrochronology
c. Dendroclimatology d. Diffuse porous woods **[Ans : (b)]**

11. _____ are woods in which the vessels or pores are rather uniform in size and distribution throughout an annual ring.

a. Pseudo – annual rings b. Dendrochronology
c. Dendroclimatology d. Diffuse porous woods **[Ans : (d)]**

12. In any tree the outer part of the wood, which is paler in colour, is called ___.

a. Ring porous woods b. Tyloses
c. Sap wood d. Heart wood **[Ans : (c)]**

13. Due to the presence of _____ and their contents the heartwood becomes coloured, dead and the hardest part of the wood.

a. Ring porous woods b. Tyloses
c. Sap wood d. Heart wood **[Ans : (b)]**

14. The _____ produces secondary phloem or bast on the outer side of the vascular bundle.

a. Vascular cambial ring b. Radial system
c. Life span d. Secondary phloem **[Ans : (a)]**

15. It is the protective tissue composed of non-living cells with suberized walls

a. Periderm b. Phellem
c. Phellogen d. Phelloderm **[Ans : (b)]**

16. The term ___ is commonly applied to all the tissues outside the vascular cambium of stem.

a. Bark b. Ring barks
c. Scale bark d. Lenticel **[Ans : (a)]**

17. _____ is raised opening or pore on the epidermis or bark of stems and roots.

a. Bark b. Ring barks
c. Scale bark d. Lenticel **[Ans : (d)]**

18. ____ in dicot roots is essential to provide strength to the growing aerial parts of the plants.

a. Secondary growth b. Vascular cambium
c. Conjunctive tissue d. All of these **[Ans : (a)]**

19. ____ is a deviation from normal secondary growth and production of secondary vascular and non-vascular tissues.

a. Cambial variants b. Cambia
c. Successive cambium d. Inter-xylary phloem **[Ans : (a)]**

20. Certain segments of ____ cease to produce secondary xylem.

a. Cambial variants b. Cambia
c. Successive cambium d. Inter-xylary phloem **[Ans : (b)]**

21. The ___ usually forms primary phloem on the outer side.

a. Medullary vascular bundles
b. Cambium
c. Intra-xylary phloem
d. Absence of vessels in the xylem **[Ans : (b)]**

22. ____ is derived from wood logs through the process of sawing.

a. Timber b. Sawing
c. Air seasoning d. Kiln seasoning **[Ans : (a)]**

23. _____ is the process in which the moisture can be removed without resorting to artificial heat.

a. Timber b. Sawing
c. Air seasoning d. Kiln seasoning **[Ans : (c)]**

11 TRANSPORT IN PLANTS

EVALUATION

1. In a fully turgid cell

a. DPD = 10 atm; OP = 5 atm; TP = 10 atm
b. DPD = 0 atm; OP = 10 atm; TP = 10 atm
c. DPD = 0 atm; OP = 5 atm; TP = 10 atm
d. DPD = 20 atm; OP = 20 atm; TP = 10 atm **[Ans : (b)]**

2. Which among the following is correct?

(i) Apoplast is fastest and operate in nonliving part
(ii) Transmembrane route includes vacuole
(iii) Symplast interconnect the nearby cell through plasma desmata
(iv) Symplast and transmembrane route are in living part of the cell

a. i and ii b. ii and iii
c. iii and iv d. i, ii, iii, iv **[Ans : (d)]**

3. What type of transpiration is possible in the xerophyte Opuntia?

a. Stomatal b. Lenticular
c. Cuticular d. All the above **[Ans : (c)]**

4. Stomata of a plant open due to

a. Influx of K^+ b. Efflux of K^+
c. Influx of Cl^- d. Influx of OH^- **[Ans : (a)]**

5. Munch hypothesis is based on

a. Translocation of food due to TP gradient and imbibition force
b. Translocation of food due to TP
c. Translocation of food due to imbibition force
d. None of the above **[Ans : (b)]**

ADDITIONAL

6. Involvement of few cells, mostly in the lateral direction.

a. Photosynthesis b. Short distance transport
c. Long distance transport d. Passive transport **[Ans : (b)]**

7. It is a downhill process which utilizes physical forces like gravity and concentration.

a. Photosynthesis b. Short distance transport
c. Long distance transport d. Passive transport **[Ans : (d)]**

8. ___ is rapid over a shorter distance but extremely slow over a longer distance.

a. Cell to cell transport b. Diffusion
c. Facilitated diffusion d. Channel protein **[Ans : (b)]**

9. ____ forms a channel or tunnel in the cell membrane for the easy passage of molecules to enter the cell.

a. Cell to cell transport b. Diffusion
c. Facilitated diffusion d. Channel protein **[Ans : (d)]**

10. Over 30 types of ___ are known from maize.

a. Porin b. Aquaporin
c. Carrier protein d. Uniport carrier protein **[Ans : (b)]**

11. Due to association with molecules to be transported, the structure of ___ gets modified until the dissociation of the molecules.

a. Porin b. Aquaporin
c. Carrier protein d. Uniport carrier protein
[Ans : (c)]

12. An__ is an integral membrane transport protein that simultaneously transports two different molecules, in opposite directions, across the membrane.

a. Symport carrier protein
b. Antiport carrier protein
c. Active transport
d. Thermodynamically **[Ans : (b)]**

13. _____ is the entry of molecules against a concentration gradient and an uphill process and it needs energy which comes from ATP.

a. Symport carrier protein b. Antiport carrier protein
c. Active transport d. Thermodynamically **[Ans : (c)]**

14. The swelling of dry seeds ,the swelling of wooden windows, tables, doors due to high humidity during the rainy season are examples of

a. Water b. Ascent of sap
c. Turgidity d. Imbibition **[Ans : (d)]**

15. The concept of _____ was introduced in 1960 by Slatyer and Taylor.

a. Water potential b. Pressure potential
c. Matric potential d. Imbibition pressure **[Ans : (a)]**

16. _____ is a mechanical force working against the effect of solute potential.

a. Solute potential b. Pressure potential
c. Matric potential d. Imbibition pressure **[Ans : (b)]**

17. Matric potential is also known as _____.

a. Solute potential b. Pressure potential
c. Matric potential d. Imbibition pressure **[Ans : (d)]**

18. _____and wall pressure make the cell fully turgid.

a. Turgor pressure b. Plasmolysis
c. Deplasmolysis d. Reverse osmosis **[Ans : (a)]**

19. Wilting of plants noticed under the condition of water scarcity is an indication of _____.

a. Turgor pressure b. Plasmolysis
c. Deplasmolysis d. Reverse osmosis **[Ans : (b)]**

20. _____ is used for purification of drinking water and desalination of seawater.

a. Turgor pressure b. Plasmolysis
c. Deplasmolysis d. Reverse osmosis **[Ans : (d)]**

21. _____ have to absorb water from the soil to maintain turgidity, metabolic activities and growth.

a. Terrestrial plants b. Root hairs
c. Imbibition d. Apoplast **[Ans : (a)]**

22. In _____ pathway water sequentially enters a cell on one side and exits from the cell on the other side.

a. Symplast b. Transmembrane
c. Active absorption d. Osmotic active absorption
[Ans : (b)]

23. The theory of _____ was postulated by Atkins (1916) and Preistley (1923).

a. Symplast b. Transmembrane
c. Active absorption d. Osmotic active absorption
[Ans : (d)]

24. In _____, the biggest challenge is the force required to lift the water to the top of the tallest trees.

a. Ascent of sap b. Periodic changes
c. Galvanometer d. Pulsation theory **[Ans : (a)]**

25. _____ in osmotic pressure of living cells of the xylem parenchyma and medullary ray act as a pump for the movement of water.

a. Ascent of sap b. Periodic changes
c. Galvanometer d. Pulsation theory **[Ans : (b)]**

26. Boehm (1809) suggested that the xylem vessels work like a capillary tube. The theory is called

a. Root pressure b. Capillary theory
c. Imbibition theory d. Strong cohesive force **[Ans : (b)]**

27. Water molecules have the strong mutual force of attraction called cohesive force due to which they cannot be easily separated from one another.

a. Root pressure b. Capillary theory
c. Imbibition theory d. Strong cohesive force **[Ans : (d)]**

28. The unbroken water column from leaf to root is just like a rope.

a. Continuity of the water column in the plant
b. Transpiration pull
c. Active transpiration
d. Water potential gradient **[Ans : (b)]**

29. Water moves as a pull from cell to cell along the _____.

a. Continuity of the water column in the plant
b. Transpiration pull
c. Active transpiration
d. Water potential gradient **[Ans : (d)]**

30. The epidermis of leaves and green stems possess many small pores called ___.

a. Stomata
b. Guard cells
c. Intercellular spaces
d. Stomatal movements **[Ans : (a)]**

31. The stoma opens to the interior into a cavity called sub-stomatal cavity which remains connected with the ____.

a. Stomata
b. Guard cells
c. Intercellular spaces
d. Stomatal movements **[Ans : (c)]**

32. In _____ stops and respiration continues with accumulation of CO_2 in the sub-stomatal cavity.

a. Theory of photosynthesis in guard cells
b. Starch – Sugar interconversion theory
c. Theory of K^+ transport
d. Dark photosynthesis **[Ans : (d)]**

33. The rate of transpiration is greatly reduced when the atmosphere is very humid.

a. Atmospheric humidity b. Temperature
c. Light d. Wind velocity **[Ans : (a)]**

34. On hot summer days, the freshness of herbaceous plants reduces turgor pressure at the day time and regains it at night.

a. Water b. Incipient wilting
c. Temporary wilting d. Permanent wilting **[Ans : (c)]**

35. The term ____ is used to designate any material applied to plants for the purpose of retarding transpiration.

a. Antitranspirant b. Gaseous exchange
c. Guttation d. Hydathodes **[Ans : (a)]**

36. Guttation occurs through stomata like pores called ___ generally present in plants that grow in moist and shady places.

a. Antitranspirant b. Gaseous exchange
c. Guttation d. Hydathodes **[Ans : (d)]**

37. The transpiration is a _____ as stated by Curtis.

a. Ganongspotometer b. Necessary evil
c. Guttation d. Hydathodes **[Ans : (b)]**

38. The term ___ denotes food material that moves in a solution.

a. Photosynthesis b. Translocation
c. Solute d. Girdled area **[Ans : (c)]**

39. From leaves to stem and roots is called _____.

a. Translocate b. Upward direction
c. Downward direction d. Radial direction **[Ans : (c)]**

40. _____ is defined as any organ in plants which receives food from source.

a. Source b. Sink
c. Phloem loading d. Phloem unloading **[Ans : (b)]**

41. As in ___, this theory states the translocation of food from higher concentration to lower concentration by the simple physical process.

a. Diffusion process
b. Activated diffusion theory
c. Electro – osmotic theory
d. Munch Mass Flow hypothesis **[Ans : (a)]**

42. _____ in soil exist in two forms, either dissolved in soil solution or adsorbed by colloidal clay particle.

a. Minerals
b. Plasma membrane
c. Mineral absorption
d. Ion – exchange **[Ans : (a)]**

43. Ions of external soil solution were exchanged with same charged (anion for anion or cation for cation) ions of the root cells.

a. Minerals b. Plasma membrane
c. Mineral absorption d. Ion – exchange **[Ans : (d)]**

44. Absorption of ions against the concentration gradient with the expenditure of metabolic energy is called _____.

a. Contact exchange theory
b. Carbonic acid exchange theory
c. Active absorption
d. Passive absorption **[Ans : (c)]**

45. Lundegardh and Burstrom (1933) observed a correlation between respiration and anion absorption.

a. Lundegardh cytochrome pump theory
b. Salt respiration
c. Bennet – Clark's Protein – Lecithin theory
d. Donnan equilibrium **[Ans : (a)]**

46. This electrical balance or equilibrium controlled by electrical as well as diffusion phenomenon is known as the_____.

a. Lundegardh cytochrome pump theory
b. Salt respiration
c. Bennet – Clark's Protein – Lecithin theory
d. Donnan equilibrium **[Ans:(d)]**

12 MINERAL NUTRITION

EVALUATION

1. Identify correct match.

1. Die back disease of citrus - (i) Mo
2. Whip tail disease - (ii) Zn
3. Brown heart of turnip - (iii) Cu
4. Little leaf - (iv) B

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

[Ans : (b)]

2. If a plant is provided with all mineral nutrients but, Mn concentration is increased, what will be the deficiency?

a. Mn prevent the uptake of Fe, Mg but not Ca
b. Mn increase the uptake of Fe, Mg and Ca
c. Only increase the uptake of Ca
d. Prevent the uptake Fe, Mg, and Ca **[Ans : (a)]**

3. The element which is not remobilized?

a. Phosphorous b. Potassium
c. Calcium d. Nitrogen **[Ans : (c)]**

4. Match the correct combination.

Minerals		Role	
A	Molybdenum	1	Chlorophyll
B	Zinc	2	Methionine

C	Magnesium	3	Auxin
D	Sulphur	4	Nitrogenase

a.	A-1	B-3	C-4	D-2
b.	A-2	B-1	C-3	D-4
c.	A-4	B-3	C-1	D-2
d.	A-4	B-2	C-1	D-3

[Ans : (c)]

5. Identify the correct statement:

i. Sulphur is essential for amino acids Cystine and Methionine
ii. Low level of N, K, S and Mo affect the cell division
iii. Non-leguminous plant Alnus which contain bacterium Frankia
iv. Denitrification carried out by nitrosomonas and nitrobacter.

a. I, II are correct b. I, II, III are correct
c. I only correct d. all are correct **[Ans : (b)]**

ADDITIONAL

6. Essential minerals which are required in higher concentration are called ___.

a. Essential elements b. Macronutrients
c. Micronutrients d. Van Helmont **[Ans : (b)]**

7. Soil provides mineral nutrients required for their growth.

a. Wood word b. De Saussure
c. Liebig d. Julius Von Sachs **[Ans : (a)]**

8. _____ Demonstrated growing a plant in a defined nutrient solution.

a. Wood word b. De Saussure
c. Liebig d. Julius Von Sachs **[Ans : (d)]**

9. Deficiency symptoms first appear on old and senescent leaves due to active movement of minerals to younger leaves.

a. Mobility
b. Actively mobile minerals
c. Relatively immobile minerals
d. Structural component minerals **[Ans : (b)]**

10. The absorption of water, movement of stomata and turgidity are due to ____.

a. Enzyme function b. Osmotic potential
c. Energy components d. William Frederick Goerick **[Ans : (b)]**

11. _____ gave the term Hydroponics and commercial technique.

a. Enzyme function b. Osmotic potential
c. Energy components d. William Frederick Goerick **[Ans : (d)]**

12. Constituent of cell membrane, proteins, nucleic acids, ATP, NADP, phytin and sugar phosphate.

a. Nitrogen b. Phosphorus
c. Potassium d. Calcium **[Ans : (b)]**

13. Stunted growth, anthocyanin formation, necrosis, inhibition of cambial activity, affect root growth and fruit ripening are symptoms of

a. Nitrogen b. Phosphorus
c. Potassium d. Calcium **[Ans : (b)]**

14. Marginal chlorosis, necrosis, low cambial activity, loss of apical dominance, lodging in cereals and curled leaf margin are symptoms of

a. Nitrogen b. Phosphorus
c. Potassium d. Calcium **[Ans : (c)]**

15. It is absorbed as Ca21 exchangeable ions.

a. Nitrogen b. Phosphorus
c. Potassium d. Calcium **[Ans : (d)]**

16. Inter veinal-chlorosis, necrosis, anthocyanin (purple) formation and Sand drown of tobacco are symptoms of

a. Nitrogen b. Phosphorus
c. Magnesium d. Sulphur **[Ans : (c)]**

17. ____ is an essential element for the synthesis of chlorophyll and carotenoids.

a. Iron b. Manganese
c. Copper d. Zinc **[Ans : (a)]**

18. It is absorbed as ferrous (Fe21) and ferric (Fe31) ions.

a. Iron b. Manganese
c. Copper d. Zinc **[Ans : (a)]**

19. It is absorbed as manganous (Mn21) ions.

a. Iron b. Manganese
c. Copper d. Zinc **[Ans : (b)]**

20. It is absorbed as cupric (Cu21) ions.

a. Iron b. Manganese
c. Copper d. Zinc **[Ans : (c)]**

21. It is absorbed as Zn21 ions.

a. Iron b. Manganese
c. Copper d. Zinc **[Ans : (d)]**

22. Death of root and shoot tips, premature fall of flowers and fruits, brown heart of beet root, internal cork of apple and fruit cracks are symptoms of

a. Boron b. Molybdenum
c. Chlorine d. Nickel **[Ans : (a)]**

23. Chlorosis, necrosis, delayed flowering, retarded growth and whip tail disease of cauliflower are symptoms of

a. Boron
b. Molybdenum
c. Chlorine
d. Nickel **[Ans : (b)]**

24. Necrosis of leaf tips is symptom of

a. Boron b. Molybdenum
c. Chlorine d. Nickel **[Ans : (d)]**

25. Little leaf is symptom of

a. Copper b. Calcium
c. Zinc d. Potassium **[Ans : (c)]**

26. The symptoms of _____ are appearance of brown spots surrounded by chlorotic veins.

a. Critical concentration b. Toxicity
c. Manganese toxicity d. Aluminium toxicity **[Ans : (c)]**

27. In ____ roots are immersed in the solution containing nutrients and air is supplied with help of tube.

a. Hydroponics b. Aeroponics
c. Both of these d. None of these **[Ans : (a)]**

28. Inspiring act of nature is self-regulation.

a. Nitrogen fixation
b. Non – biological nitrogen fixation
c. Biological nitrogen fixation
d. All of these **[Ans : (a)]**

29. Natural electrical discharge during lightening fixes atmospheric nitrogen.

a. Nitrogen fixation
b. Non – biological nitrogen fixation
c. Biological nitrogen fixation
d. All of these **[Ans : (b)]**

30. This kind of symbiotic association is beneficial for both the bacterium and plant.

a. Nitrogen fixation with nodulation
b. Nitrogen fixation without nodulation
c. Bacteroid
d. Non - legume **[Ans : (a)]**

31. A membrane bound bacterium is formed inside the nodule and is called ___.

a. Nitrogen fixation with nodulation
b. Nitrogen fixation without nodulation
c. Bacteroid
d. Non - legume [**Ans : (c)**]

32. Nitrogen fixing bacteria in root nodules appears pinkish due to the presence of this ____ pigment.

a. Fixation of atmospheric nitrogen
b. Leghaemoglobin
c. Nitirification
d. Nitrate assimilation [**Ans : (b)**]

33. The process by which nitrate is reduced to ammonia is called ____ and occurs during nitrogen cycle.

a. Fixation of atmospheric nitrogen
b. Leghaemoglobin
c. Nitirification
d. Nitrate assimilation [**Ans : (d)**]

34. Nitrates in the soil are converted back into atmospheric nitrogen by a process called _____.

a. Ammonification b. Denitrification
c. Reductive amination d. Transamination [**Ans : (b)**]

35. ___ is the process of uptake and utilization of nutrients by living organisms.

a. Nutrition b. Autotrophic nutrition
c. Heterotrophic nutrition d. Saprophytes [**Ans : (a)**]

36. ____ is further divided into saprophytic, parasitic, symbiotic and insectivorous type.

a. Nutrition
b. Autotrophic nutrition
c. Heterotrophic nutrition
d. Saprophytes [**Ans : (c)**]

37. The leafless stem twine around the host and produce haustoria.

a. Total stem parasite b. Total root parasite
c. Partial stem parasite d. Partial root parasite **[Ans : (a)]**

38. Loranthus grows on fig and mango trees and absorb water and minerals from xylem.

a. Total stem parasite b. Total root parasite
c. Partial stem parasite d. Partial root parasite **[Ans : (c)]**

39. Fungi associated with roots of higher plants including Gymnosperms.

a. Lichens
b. Mycorrhizae
c. Rhizobium and legumes
d. Cyanobacteria and coralloid roots **[Ans : (b)]**

40. Pitcher is a modified leaf and contains digestive enzymes.

a. Nepenthes b. Drosera
c. Utricularia d. Dionaea **[Ans : (a)]**

41. Submerged plant in which leaf is modified into a bladder to collect insect in water.

a. Nepenthes b. Drosera
c. Utricularia d. Dionaea **[Ans : (c)]**

42. Two folds of lamina consist of sensitive trigger hairs and when insects touch the hairs it will close.

a. Nepenthes b. Drosera
c. Utricularia d. Dionaea **[Ans : (d)]**

13 PHOTOSYNTHESIS

EVALUATION

1. **Assertion (A): Increase in Proton gradient inside lumen responsible for ATP synthesis**

1. **Reason (R): Oxygen evolving complex of PS I located on thylakoid membrane facing Stroma, releases H1 ions**

a. Both Assertion and Reason are True.
b. Assertion is True and Reason is False.
c. Reason is True and Assertion is False.
d. Both Assertion and Reason are False. **[Ans : (b)]**

2. **Which chlorophyll molecule does not have a phytol tail?**

a. Chl-a b. Chl-b
c. Chl-c d. Chl-d **[Ans : (c)]**

1. **The correct sequence of flow of electrons in the light reaction is**

a. PS II, plastoquinone, cytochrome, PS I, ferredoxin.
b. PS I, plastoquinone, cytochrome, PS II ferredoxin.
c. PS II, ferredoxin, plastoquinone, cytochrome, PS I.
d. PS II, plastoquinone, cytochrome, PS II, ferredoxin.

[Ans : (a)]

2. **For every CO_2 molecule entering the C_3 cycle, the number of ATP & NADPH required**

a. 2ATP 1 2NADPH b. 2ATP 1 3NADPH
c. 3ATP 1 2NADPH d. 3ATP 1 3NADPH **[Ans : (c)]**

3. **Identify true statement regarding light reaction of photosynthesis?**

a. Splitting of water molecule is associate with PS I.
b. PS I and PS II involved in the formation of NDPH1H_1.

c. The reaction center of PS I is Chlorophyll a with absorption peak at 680 nm.

d. The reaction center of PS II is Chlorophyll a with absorption peak at 700 nm. **[Ans : (b)]**

ADDITIONAL

4. Plants obtain___ from air and light.

a. Organic substances b. Nourishment

c. Vegetation d. Oxygen **[Ans : (b)]**

5. ____ released by the plants is possible only in light.

a. Organic substances b. Nourishment

c. Vegetation d. Oxygen **[Ans : (d)]**

6. Julius Von Sachs discovered that product of photosynthesis was _____.

a. Noxious gas b. Solar energy

c. Starch d. Photolysis **[Ans : (c)]**

7. ____ is a collection of oxidation and reduction reactions

a. Photochemical oxidation

b. Photosynthesis

c. Anaerobic photosynthesis

d. Photosynthetic organisms **[Ans : (b)]**

8. ___ are the main site of photosynthesis and both light and dark reactions.

a. Carbon cycle b. Chloroplasts

c. Thylakoid d. Granum **[Ans : (b)]**

9. Thylakoids found in granum are called ___.

a. Grana lamellae b. Stroma lamellae

c. Fret membrane d. Quantasomes **[Ans : (a)]**

10. In ____ thylakoid lies freely in cytoplasm without envelope.

a. Semi - autonomy b. Cyanobacteria

c. Stroma d. Solar energy **[Ans : (b)]**

11. Thylakoid contains pigment systems which produces ATP and NADPH 1 H_1 using _____.

a. Semi - autonomy b. Cyanobacteria
c. Stroma d. Solar energy **[Ans : (d)]**

12. ____ring has several side groups which alter the properties of the pigment.

a. Reaction centre b. Tadpole
c. Porphyrin d. Phytol tail **[Ans : (c)]**

13. ____ is synthesized from intermediates of respiration and photosynthesis.

a. Chlorophyll b. Carotenoids
c. Lycopene d. Xanthophylls **[Ans : (a)]**

14. Lutein, Violaxanthin and Fucoxanthin are examples for ____.

a. Xanthophylls b. Lutein
c. Phycobilins d. Both a & b **[Ans : (a)]**

15. _____ are proteinaceous pigments, soluble in water, and do not contain Mg and Phytol tail.

a. Xanthophylls b. Lutein
c. Phycobilins d. Both a & c **[Ans : (c)]**

16. ___ is a transverse electromagnetic wave.

a. Light b. Electromagnetic spectrum
c. Photon d. Quantum **[Ans : (a)]**

17. Each photon contains an amount of energy known as ____.

a. Light b. Electromagnetic spectrum
c. Photon d. Quantum **[Ans : (d)]**

18. The term____ refers to complete retention of light, without reflection.

a. Quantasomes
b. Photochemical reaction
c. Absorption
d. Carbon dioxide **[Ans : (c)]**

19. A curve obtained by plotting the amount of absorption of different wavelengths of light by a pigment is called its _____.

a. Wavelengths b. Absorption spectrum
c. Action spectrum d. Spectrum **[Ans : (b)]**

20. Emerson focus was to determine at which _____ the photochemical yield of oxygen was maximum.

a. Quantum yield b. Wavelength
c. Emerson's first effect d. Shorter wavelength of light
[Ans : (b)]

21. The fall in the photosynthetic yield beyond red region of the spectrum is referred as Red drop or _____.

a. Quantum yield b. Wavelength
c. Emerson's first effect d. Shorter wavelength of light
[Ans : (c)]

22. R. Hill (1937) isolated chloroplasts and when they were illuminated in the presence of suitable electron acceptors such as _____, they were reduced to ferrocyanide and oxygen is evolved.

a. Monochromatic light b. Emerson's enhancement effect
c. Ferricyanide d. Both b & c **[Ans : (c)]**

23. _____ is an Oxidation and Reduction process.

a. Photosynthesis b. Light reaction
c. Reducing powers d. Oxygen **[Ans : (a)]**

24. _____ takes place with the help of light generated electron.

a. Ground state b. Electronic state
c. Phosphorylation d. Excited state **[Ans : (c)]**

25. The electron from first singlet state (S_1) returns to ground state (S_0) by releasing energy in the form of radiation energy (light) in the red region and this is known as _____.

a. Fluorescence b. Phosphorescence
c. Thylakoid membrane d. Both a & b **[Ans : (a)]**

26. ____ is the delayed emission of absorbed radiations.

a. Fluorescence b. Phosphorescence
c. Thylakoid membrane d. Both a & c **[Ans : (b)]**

27. ___ contains Photosystem I (PS I) and Photosystem II (PS II).

a. Fluorescence b. Phosphorescence
c. Thylakoid membrane d. Both b & c **[Ans : (c)]**

28. ____ taking place in chloroplast with the help of light.

a. Phosphorylation
b. Photophosphorylation
c. Cyclic photophosphorylation
d. Non - photophosphorylation **[Ans : (a)]**

29. _____ is the process of synthesis of ATP by the addition of inorganic phosphate to ADP.

a. Phosphorylation
b. Photophosphorylation
c. Cyclic photophosphorylation
d. Non - photophosphorylation **[Ans : (a)]**

30. ___takes place in both cyclic and non-cyclic electron transport

a. Phosphorylation
b. Photophosphorylation
c. Cyclic photophosphorylation
d. Non - photophosphorylation **[Ans : (b)]**

31. _____ refers to the electrons ejected from the pigment system I (Photosystem I) and again cycled back to the PS I.

a. Phosphorylation
b. Photophosphorylation
c. Cyclic photophosphorylation
d. Non - photophosphorylation **[Ans : (c)]**

32. The electron flow looks like the appearance of letter 'Z' and so known as ___.

a. Z scheme b. Splitting of water
c. Electron flow d. Excited **[Ans : (a)]**

33. _____ starts from P680 through a series of electron carrier molecules like pheophytin, plastoquinone (PQ), cytochrome b6-f complex, plastocyanin (PC) and finally reaches P700 (PS I).

a. Z scheme b. Splitting of water
c. Electron flow d. Excited **[Ans : (c)]**

34. Second quantum is used for transport of ____ from PS I to NADP1.

a. Quantum
b. Electron
c. Non – cyclic electron transport
d. Transportation **[Ans : (b)]**

35. _____molecule takes place inside the membrane.

a. Chemiosmosis b. Splitting of water
c. Proton d. ATP synthase enzyme **[Ans : (b)]**

36. This gradient is broken down due to the movement of proton across the membrane to the stroma through CFO of the _____.

a. Chemiosmosis b. Splitting of water
c. Proton d. ATP synthase enzyme **[Ans : (d)]**

37. This reaction does not require light.

a. Biosynthetic phase b. RUBISCO
c. C3 cycle d. Carbon fixation **[Ans : (a)]**

38. Dark reaction is temperature dependent and so it is also called ____.

a. Thermo chemical reaction
b. Carboxylation
c. Reduction
d. Regeneration **[Ans : (a)]**

39. Glyceraldehyde - 3 - phosphate is converted into its isomeric form di hydroxy acetone phosphate (DHAP).

a. Thermo chemical reaction b. Carboxylation
c. Reduction d. Regeneration **[Ans : (c)]**

40. Among them _____ belong to dicots and rest of them are monocots

a. Dicarboxylic acid pathway
b. 1000 species
c. 300 species
d. Carbon fixation [**Ans : (c)**]

41. ____ of CO_2 with minimal loss is due to absence of photorespiration.

a. Bundle sheath cell b. Fixation
c. Plasmodesmata d. Decarboxylation [**Ans : (b)**]

42. C_4 plants are partially adapted to _____.

a. Pyruvic acid b. Drought conditions
c. Inhibitory effect d. Photorespiration [**Ans : (b)**]

43. It is one of the carbon pathways identified in succulent plants growing in semi-arid or xerophytic condition.

a. CAM cycle b. Scotoactive
c. Decarboxylated d. Photosynthesis [**Ans : (a)**]

44. During day time stomata are closed and CO_2 is not taken but continue their _____.

a. CAM cycle b. Scotoactive
c. Decarboxylated d. Photosynthesis [**Ans : (d)**]

45. _____ is the excess respiration taking place in photosynthetic cells due to absence of CO_2 and increase of O_2.

a. Respiration b. Decker
c. Photorespiration d. C_2 cycle [**Ans : (c)**]

46. ___ is converted into glycine and transferred into mitochondria.

a. Glycolate b. Glyoxylate
c. Glyceric acid d. Photorespiration [**Ans : (b)**]

47. ___ protects cells from Photo oxidation.

a. Glycolate b. Compensation point
c. Limiting factor d. Both a & b [**Ans : (a)**]

48. In 1905, ____ put forth the importance of smallest factor.

a. Photosynthesis b. Blackman
c. Light intensity d. Light **[Ans : (b)]**

49. Further increase in photosynthesis is possible only if the available ____ is also increased proportionately.

a. Photosynthesis b. Blackman
c. Light intensity d. Light **[Ans : (c)]**

50. ____ is found only 0.3 % in the atmosphere but plays a vital role.

a. Intensity of light b. Quantity of light
c. Quality of light d. Carbon dioxide **[Ans : (d)]**

51. The _____ for photosynthesis varies from plant to plant.

a. Oxygen b. Optimum temperature
c. Photolysis of water d. Photosynthesis **[Ans : (b)]**

52. Photosynthetic end products like carbohydrates are accumulated in cells and if translocation of carbohydrates is slow then this will affect the rate of photosynthesis.

a. Photosynthetic pigments
b. Protoplasmic factor
c. Accumulation of carbohydrates
d. Anatomy of leaf **[Ans : (c)]**

53. Thickness of cuticle and epidermis, distribution of stomata, presence or absence of Kranz anatomy and relative proportion of photosynthetic cells affect photosynthesis.

a. Photosynthetic pigments b. Accumulation of carbohydrates
c. Protoplasmic factor d. Anatomy of leaf **[Ans : (d)]**

54. Van Neil (1930) discovered a bacterium that releases ____ instead of oxygen during photosynthesis.

a. Bacterial photosynthesis b. Chloroplast
c. Chlorosomes d. Sulphur **[Ans : (d)]**

14 RESPIRATION

EVALUATION

1. **The number of ATP molecules formed by complete oxidation of one molecule of pyruvic acid is**

   a. 12 b. 13

   c. 14 d. 15 **[Ans : (d)]**

2. **During oxidation of two molecules of cytosolic NADH + H^+, number of ATP molecules produced in plants are**

   a. 3 b. 4

   c. 6 d. 8 **[Ans : (c)]**

3. **The compound which links glycolysis and Krebs cycle is**

   a. succinic acid b. pyruvic acid

   c. acetyl CoA d. citric acid **[Ans : (b)]**

4. **Assertion(A): Oxidative phosphorylation takes place during the electron transport chain in mitochondria.**
   Reason (R): Succinyl CoA is phosphorylated into succinic acid by substrate phosphorylation.

   a. A and R is correct. R is correct explanation of A

   b. A and R is correct but R is not the correct explanation of A

   c. A is correct but R is wrong

   d. A and R is wrong. **[Ans : (b)]**

5. **Which of the following reaction is not involved in Krebs cycle.**

   a. Shifting of phosphate from 3C to 2C

   b. Splitting of Fructose 1,6 bisphosphate of into two molecules 3C compounds.

   c. Dephosphorylation from the substrates

   d. All of these **[Ans : (c)]**

ADDITIONAL

6. **The process of CO_2 evolution is called _____.**
   a. Respiration b. Respiratory substrates
   c. Glucose d. ATP **[Ans : (a)]**

7. **_____ is the commonest respiratory substrate.**
   a. Respiration b. Respiratory substrates
   c. Glucose d. ATP **[Ans : (c)]**

8. **The amount of oxygen released from ____ is equal to the amount of oxygen utilized in respiration.**
   a. Floating respiration b. Protoplasmic respiration
   c. Compensation point d. Photosynthesis **[Ans : (d)]**

9. **____ is an instant source of energy within the cell.**
   a. Respiration b. Energy currency of the cell
   c. ATP d. Energy transformation **[Ans : (c)]**

10. **The reaction in which NAD_1 and FAD gain (reduction) or lose (oxidation) electrons are called_____.**
    a. $FADH_2$ b. Electrons
    c. Redox reaction d. Cellular respiration **[Ans : (c)]**

11. **Respiration occurring in the presence of oxygen is called ____.**
    a. Aerobic respiration b. Energy
    c. Lactic acid d. All of the above **[Ans : (a)]**

12. **____ is conversion of glucose into pyruvic acid in cytoplasm of cell.**
    a. Glycolysis b. Electron transport chain
    c. Kreb's cycle d. Link reaction **[Ans : (a)]**

13. **Glycolysis is a linear series of reactions in which 6-carbon glucose is split into two molecules of 3-carbon pyruvic acid.**
    a. Glycolysis b. Cytoplasm
    c. Preparatory phase d. Pay off phase **[Ans : (a)]**

14. Glucose is phosphorylated into glucose-6-phosphate by the enzyme hexokinase, and subsequent reactions are carried out by different enzymes

a. Glycolysis b. Cytoplasm
c. Preparatory phase d. Pay off phase **[Ans : (c)]**

15. Two molecules of glyceraldehyde-3-phosphate oxidatively phosphorylated into two molecules of 1,3-bisphosphoglycerate.

a. Glycolysis b. Cytoplasm
c. Preparatory phase d. Pay off phase **[Ans : (d)]**

16. ____ starts with condensation of acetyl CoA with oxaloacetate in the presence of water to yield citrate or citric acid.

a. TCA cycle
b. Substrate level phosphorylation
c. Glycolysis
d. Both a & b **[Ans : (a)]**

17. Two molecules of pyruvic acid formed at the end of ____ enter into the mitochondrial matrix.

a. TCA cycle
b. Substrate level phosphorylation
c. Glycolysis
d. Both b & c **[Ans : (c)]**

18. In cristae many ____ are present which have electron transport carriers are present.

a. Kreb's cycle
b. Electron transport chain
c. Oxysomes
d. ATP synthesis **[Ans : (c)]**

19. According to Peter Mitchell's Chemiosmotic theory this electron transport is coupled to ____.

a. Kreb's cycle b. Electron transport chain
c. Oxysomes d. ATP synthesis **[Ans : (d)]**

20. This complex contains two copper centers (A and B) and cytochromes a and a_3.

a. Complex I (NADH dehydrogenase)
b. Complex II (Succinic dehydrogenase)
c. Complex III (Cytochromebc 1 complex)
d. Complex IV (Cytochrome c oxidase) **[Ans : (d)]**

21. The Mechanism of mitochondrial ATP synthesis is based on ____.

a. Oxidative phosphorylation
b. Chemiosmotic hypothesis
c. Power houses of the cell
d. Aerobic prokaryotes **[Ans : (b)]**

22. In the case of ____ due to lack of mitochondria each molecule of glucose produces 38 ATP molecules.

a. Oxidative phosphorylation
b. Chemiosmotic hypothesis
c. Power houses of the cell
d. Aerobic prokaryotes **[Ans : (d)]**

23. It prevents flow of electrons from $NADH_1$ H_1/$FADH_2$ to Co Q.

a. 2, 4 DNP (Dinitrophenol) b. Cyanide
c. Rotenone d. Oligomycin **[Ans : (c)]**

24. When respiratory substrate is an____ the value of RQ will be more than unity.

a. Respiratory Quotient b. Aerobic respiration
c. Anaerobic respiration d. Organic acid **[Ans : (d)]**

25. Some organisms can respire in the absence of oxygen.

a. Anaerobic respiration b. Alcoholic fermentation
c. Lactic acid fermentation d. Both a & b **[Ans : (a)]**

26. Some bacteria (Bacillus), fungi and muscles of vertebrates produce lactic acid from pyruvic acid

a. Anaerobic respiration b. Alcoholic fermentation
c. Lactic acid fermentation d. Both a & c **[Ans : (c)]**

27. It is an alternate way for breakdown of glucose.

a. Pentose phosphate pathway
b. Warburg-Dickens-Lipmann pathway
c. Six carbon Glucose – 6 – phosphate
d. Non – oxidative pathway **[Ans : (a)]**

28. ____ generated is used for reductive biosynthesis and counter damaging the effects of oxygen free radicals.

a. HMP shunt b. Coenzyme NADPH
c. Ribose – 5 – phosphate d. Erythrose **[Ans : (b)]**

29. ____ is used for synthesis of anthocyanin, lignin and other aromatic compounds.

a. HMP shunt b. Coenzyme NADPH
c. Ribose – 5 – phosphate d. Erythrose **[Ans : (d)]**

15 PLANT GROWTH AND DEVELOPMENT

EVALUATION

1. Select the wrong statement from the following:

a. Formative phase of the cells retain the capability of cell division.

b. In elongation phase development of central vacuole takes place.

c. In maturation phase thickening and differentiation takes place.

d. In maturation phase, the cells grow further. **[Ans : (d)]**

2. If the diameter of the pulley is 6 inches, length of pointer is 10 inches and distance travelled by pointer is 5 inches. Calculate the actual growth in length of plant.

a. 3inches b. 6 inches

c. 12 inches d. 30 inches **[Ans : (a)]**

3. In unisexual plants, sex can be changed by the application of

a. Ethanol b. Cytokinins

c. ABA d. Auxin **[Ans : (d)]**

4. Select the correctly matched one:

	Column 1		Column 2
A	Human urine	i	Auxin –B
B	Corn gram oil	ii	GA3
C	Fungus	iii	Abscisic acid II
D	Herring fish	iv	Kinitin sperm
E	Unripe maize	v	Auxin A grains
F	Young cotton	vi	Zeatin bolls

a. A-iii, B-iv, C-v, D-vi, E-i, F-ii,

b. A-v, B-i, C-ii, D-iv, E-vi, F-iii,

c. A-iii, B-v, C-vi, D-i, E-ii, F-iv,

d. A-ii, B-iii, C-v, D-vi, E-iv, F-i **[Ans : (b)]**

5. Seed dormancy allows the plants to

a. overcome unfavourable climatic conditions
b. develops healthy seeds
c. reduce viability
d. prevent deterioration of seeds **[Ans : (a)]**

6. _____ is the powerful growth inhibitor

a. Ethanol b. Cytokinins
c. ABA d. Auxin **[Ans : (c)]**

ADDITIONAL

7. Leaves, flowers and fruits are limited in growth or of determinate and is called ..... closed form growth.

a. open form of growth. b. closed form of growth
c. metabolism d. photosynthesis **[Ans : (b)]**

8. The example for Polycarpic perennials produces flowers every year during life time.

a. Coconut b. Mango
c. Paddy and Bean d. Bamboo **[Ans : (a)]**

9. During ..... stage cells attain mature form and size.

a. Formative phase b. Elongation Phase
c. Maturation Phase d. all the above **[Ans : (c)]**

10. The total growth is plotted against time and ____shaped sigmoid curve (Grand period curve) is obtained.

a. 'T' shaped b. 'S' shaped
c. 'L' shaped d. 'M' shaped **[Ans : (b)]**

11. In this phase cell wall thickening due to new particle deposition on the inner surface of the cell wall takes place.

a. Lag phase b. Log phase
c. Decelerating phase d. Maturation phase **[Ans : (d)]**

12. The growth rate becomes zero is _____.

a. Lag phase b. Log phase
c. Decelerating phase d. Maturation phase **[Ans : (d)]**

13. **This growth occurs in many higher plants and plant organs and is measured in size or weight _____.**
    a. Arithmetic growth
    b. Geometric growth
    c. Arithmetic and geometric growth
    d. Measurement of growth **[Ans : (b)]**

14. **Plants often grow by a combination of ____patterns.**
    a. Arithmetic growth
    b. Geometric growth
    c. Arithmetic and geometric growth
    d. Measurement of growth **[Ans : (c)]**

15. **The increase in the length of the stem tip can easily be measured by an arc auxanometer _____.**
    a. Kinetics of growth
    b. Growth rate
    c. Conditions of growth
    d. Measurement of growth **[Ans : (d)]**

16. **_____ provides the medium for enzymatic activities needed for growth.**
    a. Water b. Nutrition
    c. Temperature d. Oxygen **[Ans : (a)]**

17. **____ is necessary for respiration.**
    a. Water b. Nutrition
    c. Temperature d. Oxygen **[Ans : (d)]**

18. **____ stimulates healthy growth.**
    a. Water b. Nutrition
    c. Temperature d. Light **[Ans : (d)]**

19. **____ is the regaining of the ability of cell division by the differentiated cells.**
    a. Differentiation b. Dedifferentiation
    c. Redifferentiation d. Plasticity **[Ans : (b)]**

20. Differentiated cells, after multiplication again lose the ability to divide and mature to perform specific functions ___.

a. Differentiation
b. Dedifferentiation
c. Redifferentiation
d. Plasticity [**Ans : (c)**]

21. Those produced in water in buttercup also represent the heterophyllous development due to the environment is an example of ____.

a. Differentiation b. Dedifferentiation
c. Redifferentiation d. Plasticity [**Ans : (d)**]

22. The effect of one or more substance in such a way that both promote each others activity is ____.

a. Synergistic effect
b. Antagonistic effect
c. Synergistics and antagonistics effects
d. None of the above [**Ans : (a)**]

23. ABA induces dormancy and gibberellins break it, is called as ____.

a. Synergistic effect
b. Antagonistic effect
c. Synergistics and antagonistics effects
d. None of the above [**Ans : (b)**]

24. F. W. Went in 1928 collected _____ in agar jelly.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins [**Ans : (d)**]

25. In 1954, Skoog and Miller discovered that autoclaved DNA from herring sperm stimulated cell division in tobacco pith cells _____.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins [**Ans : (b)**]

26. Almost all plant tissues produce ____ gas in minute quantities.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins **[Ans : (a)]**

27. They are not diffusible.

a. Anti auxins b. Free auxins
c. Bound auxins d. Both b & c **[Ans : (c)]**

28. Immature seeds are rich in ____.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins **[Ans : (c)]**

29. ____ produces extraordinary elongation of stem caused by cell division and cell elongation.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins **[Ans : (c)]**

30. ____ promotes cell division in the presence of auxin (IAA).

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins **[Ans : (b)]**

31. _____ can be measured by gas chromatography.

a. Ethylene b. Cytokinins
c. Gibberellins d. Auxins **[Ans : (a)]**

32. Dispersal of spores and seeds, dehiscence of sporangia, bursting of seeds and movement of elaters are the examples of ____.

a. Plant movements b. Vital movements
c. Physical movements d. Both b & c **[Ans : (c)]**

33. The movement arising from internal changes or internal stimuli of plant body is called ____.

a. Autonomic movements of locomotion
b. Paratonic movement of locomotion
c. Autonomic movement of curvature
d. Both a & b **[Ans : (c)]**

34. When the growth is more on upper surface, petals show curvature on the lower side and ultimately the flower opens.

a. Hyponasty b. Epinasty
c. Nutation d. Cyclosis **[Ans : (b)]**

35. A movement that occurs in response to a unidirectional stimulus is called __.

a. Tropic movement b. Nastic movement
c. Diageotropic d. Apogeotropic **[Ans : (a)]**

36. The tropic movement taking place as a response to light stimulus is called __.

a. Geotropism b. Phototropism
c. Chemotropic d. Hydrotropic **[Ans : (b)]**

37. The nastic movement caused in response to light is called ___.

a. Photonasty
b. Thermonasty
c. Seismonastic movement
d. Hydroscopic movement **[Ans : (a)]**

38. The nastic movement taking place in response to temperature is called ___.

a. Photonasty
b.Thermonasty
c. Seismonastic movement
d. Hydroscopic movement **[Ans : (b)]**

39. The plants that require long critical day length for flowering are called ___.

a. Photoperiodism b. Long day plants
c. Short long day plants d. Short day plants **[Ans : (b)]**

40. Tobacco, Cocklebur, Soybean, Rice and Chrysanthemum are examples for ___.

a. Photoperiodism b. Long day plants
c. Short long day plants d. Short day plants **[Ans : (d)]**

41. Sugarcane and Coleus are examples of ____.

a. Long short day plants
b. Intermediate day plants
c. Day neutral plants
d. Short day plants **[Ans : (b)]**

42. Potato, Rhododendron, Tomato and Cotton are examples for ____.

a. Long short day plants
b. Intermediate day plants
c. Day neutral plants
d. Short day plants **[Ans : (c)]**

43. ___ is converted to F (Florigen).

a. Vernalization b. Vernalin
c. Florigen d. Devernalization **[Ans : (b)]**

44. During _____ cotyledons are pushed out of the soil.

a. Seed germination
b. Epigeal germination
c. Hypogeal germination
d. Water **[Ans : (b)]**

45. During ____ cotyledons remain below the soil due to rapid elongation of epicotyls.

a. Seed germination b. Epigeal germination
c. Hypogeal germination d. Water **[Ans : (c)]**

46. It is necessary for germination.

a. Temperature b. Oxygen
c. Light d. Soil conditions **[Ans : (b)]**

47. The seeds of some plants, when shed will contain immature embryo.

a. Maturity of embryo b. Viability
c. Dormancy d. Light **[Ans : (a)]**

48. The dormancy of photoblastic seeds can be broken by exposing them to red light.

a. Maturity of embryo b. Viability
c. Dormancy d. Light **[Ans : (d)]**

49. Germination of some seeds is strongly promoted by ____.

a. Scarification
b. Impaction
c. Stratification
d. Alternating temperatures **[Ans : (d)]**

50. Old age is called _____ in plants.

a. Senescence
b. Phytogeronotology
c. Top senescence
d. Deciduous senescence **[Ans : (a)]**

51. It occurs in aerial parts of plants.

a. Senescence
b. Overall senescence
c. Top senescence
d. Deciduous senescence **[Ans : (c)]**

52. It is common in deciduous plants and ccurs only in leaves of plants, bulk of the stem and root system remains alive.

a. Senescence
b. Overall senescence
c. Top senescence
d. Deciduous senescence **[Ans : (d)]**

53. First it occurs in old leaves followed by new leaves then stem and finally root system.

a. Senescence
b. Phytogeronotology
c. Top senescence
d. Progressive senescence **[Ans : (d)]**

54. _____ separates dead parts of the plant, like old leaves and ripe fruits.

a. Abscission
b. Phytogeronotology
c. Top senescence
d. Deciduous senescence **[Ans : (a)]**

55. If the reaction is permanent and the plant function does not return to the normal state it is called ____.

a. Stress physiology
b. Strain
c. Elastic biological strain
d. Plastic biological strain **[Ans : (d)]**

56. One of the most famous ___ plants is Black walnut.

a. Allelopathic b. Juglone
c. Solanaceous d. Wheat seedling **[Ans : (a)]**

57. ___plants such as tomato, capsicum and eggplant are susceptible to juglone.

a. Allelopathic b. Juglone
c. Solanaceous d. Wheat seedling **[Ans : (c)]**

58. Plants are subjected to permanent wilting in soil drought and temporary wilting in atmospheric drought.

a. Pathogenicity b. Abiotic stress
c. Heliophytes d. High temperature **[Ans : (d)]**

59. ____stress is quite harmful to plants and the temperature near freezing point causes irreversible damage.

a. Low temperature b. Cold resistant
c. Air pollutants d. Frost stress **[Ans : (a)]**

60. The temporary inundation of plants and its parts by flooding causes oxygen deficiency to the roots and soil borne microorganisms.

a. Water stress b. Flood stress
c. Drought stress d. Salt stress **[Ans : (b)]**

61. Most commonly the plants which are present near the seashore and estuaries are subjected to _____.

a. Water stress b. Flood stress
c. Drought stress d. Salt stress [**Ans : (d)**]

62. _____ are native to saline soils.

a. Halophytes b. Euryhaline
c. Stenohaline d. Salt tolerant plants [**Ans : (a)**]

63. The halophytes with narrow range of resistance are called _____.

a. Halophytes b. Euryhaline
c. Stenohaline d. Salt tolerant plants [**Ans : (c)**]

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1 THE LIVING WORLD

EVALUATION

1. **A living organism is differentiated from non living structure based on**
   a) Reproduction b) Growth
   c) Metabolism d) All the above **[Ans. (d)]**

2. **A group of organisms having similar traits of a rank is**
   a) Species b) Taxon
   c) Genus d) Family **[Ans. (b)]**

3. **Every unit of classification regardless of its rank is**
   a) Taxon b) Variety
   c) Species d) Strain **[Ans. (a)]**

4. **Which of the following is not present in same rank?**
   a) Primata b) Orthoptera
   c) Diptera d) Insecta **[Ans. (a)]**

5. **What taxonomic aid gives comprehensive information about a taxon?**
   a) Taxonomic Key b) Herbarium
   c) Flora d) Monograph **[Ans. (d)]**

6. **Who coined the term biodiversity?**
   a) Walter Rosen b) AG Tansley
   c) Aristotle d) AP de Candole **[Ans. (a)]**

7. **Molecular taxonomic tool consists of**
   a. DNA and RNA
   b. Mitochondria and Endoplasmic reticulum
   c. Cell wall and Membrane proteins
   d. All the above **[Ans. (a)]**

ADDITIONAL

8. **The presence of a large number of species in a particular ecosystem is called**
   a) producer. b) bio diversity
   c) consumer d) decomposer **[Ans. (b)]**

9. **Who was introduced the term bio – diversity?**
   a) A.G.Tansley b) Walter Rosen
   c) E.D.Wilson d) Aristotle **[Ans. (b)]**

10. **Who was defined the term bio-diversity?**
    a) A.G.Tansley b) Walter Rosen
    c) E.D.Wilson d) Aristotle **[Ans. (c)]**

11. **Ecosystem is a community of living organisms non-living environment and their interrelationships. It relates with**
    a) A.G.Tansley b) Walter Rosen
    c) E.D.Wilson d) Aristotle **[Ans. (a)]**

12. **Study all the living organism hence it becomes necessary to device some-means and methods to make this possible and this process is called ___.**
    a) taxonomy b) classification
    c) nomenclature d) identification **[Ans. (b)]**

13. **____ indicates categories at different levels, for example Kingdom Animalia, includes multicellular animals such as reptiles, mammals, etc.**
    a) Taxa b) Class
    c) Species d) Phylum **[Ans. (a)]**

14. **Science of classification is called as _____.**
    a) Taxonomy b) Classification
    c) Nomenclature d) Identification **[Ans. (a)]**

15. **Who was known as "Father of Botany"?**
    a) Theophrastus b) John Ray
    c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (a)]**

16. All living organisms can be classified into different taxa is called____.

a) Taxonomy b) Classification
c) Nomenclature d) Identification **[Ans. (a)]**

17. ____ is the science of arrangement of living organisms.

a) Taxonomy b) Classification
c) Nomenclature d) Identification **[Ans. (a)]**

18. The word taxonomy was coined by _____.

a) Carolus Linnaeus
b) Aristotle
c) Augustin Pyramus de Candole
d) Charles Darwin **[Ans. (c)]**

19. _____ is called the father of taxonomy

a) Carolus Linnaeus
b) Aristotle
c) Augustin Pyramus de Candole
d) Charles Darwin **[Ans. (b)]**

20. _____ is the father of modern taxonomy.

a) Carolus Linnaeus
b) Aristotle
c) Augustin Pyramus de Candole
d) Charles Darwin **[Ans. (a)]**

21. Historia Animalium was written by _____.

a) Carolus Linnaeus
b) Aristotle
c) Augustin Pyramus de Candole
d) Charles Darwin **[Ans. (b)]**

22. Who was considered as English Naturalist?

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (b)]**

23. In the following who is referred as "Father of Modern Taxonomy"?

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (c)]**

24. Who did publish Methodus Plantarum Nova?

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (b)]**

25. ____ aimed at publishing a complete system of nature, which included works on mammals, reptiles, birds, fishes and insects.

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (b)]**

26. Who did relate with scientific system of taxonomy and binomial nomenclature?

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (c)]**

27. _____ introduced the method of representing evolutionary relationships with the help of a tree diagram known as cladogram.

a) Theophrastus b) John Ray
c) Carolus Linnaeus d) Ernst Haeckal **[Ans. (d)]**

28. The advancement in molecular techniques and biochemical assays has led to a new classification is called ____.

a) Two Domain Classification
b) Three Domain Classification
c) Five Domain Classification
d) Seven Domain Classification **[Ans. (b)]**

29. Three domain classification was proposed by

a) R.H.Whittaker
b) Carl Woese
c) Carl Woese & co - workers
d) Cavalier-Smith **[Ans. (c)]**

30. **Carl Woese & co – workers classified organisms based on the difference in __ genes.**
a) 16S rRNA b) 5S rRNA
c) 70SrRNA d) 80SrRNA **[Ans. (a)]**

31. **_____ is the basic unit of classification in the taxonomic hierarchical system.**
a) Species b) Genus
c) Family d) Order **[Ans. (a)]**

32. **There are some exceptional animals which can produce sterile offspring because of mating with closely related.**
a) Species b) Genus
c) Family d) Order **[Ans. (a)]**

33. **It is a group of closely related species which have evolved from a common ancestor.**
a) Species b) Genus
c) Family d) Order **[Ans. (b)]**

34. **It is a taxonomic category which includes a group of related genera.**
a) Species b) Genus
c) Family d) Order **[Ans. (c)]**

35. **_____ category includes an assemblage of one or more related families which show few common features.**
a) Species b) Genus
c) Family d) Order **[Ans. (d)]**

36. **One or more similar families are grouped together to form a/an _____.**
a) Species b) Genus
c) Family d) Order **[Ans. (d)]**

37. **This category includes one or more related orders with some common characters.**
a) Order b) Class
c) Phylum d) Kingdom **[Ans. (c)]**

38. It is the top most of the taxonomic hierarchy.

a) Order b) Class
c) Phylum d) Kingdom **[Ans. (d)]**

39. The process of assigning scientific names to animals or taxonomic group is called __.

a) Systematics b) Nomenclature
c) Biodiversity d) Classification **[Ans. (b)]**

40. _____ functions to provide names for all taxa at all levels in the hierarchy of life.

a) Systematics b) Nomenclature
c) Biodiversity d) Classification **[Ans. (b)]**

41. Binomial Nomenclature was popularized by

a) Huxley and Stricklandt
b) Carolus Linnaeus
c) Charles Darwin
d) Aristotle **[Ans. (b)]**

42. Trinomial Nomenclature was proposed by

a) Huxley and Stricklandt
b) Carolus Linnaeus
c) Charles Darwin
d) Aristotle **[Ans. (a)]**

43. _____ is the basic unit of classification.

a) Species b) Genus
c) Family d) Order **[Ans. (a)]**

44. The term species was coined by _____.

a) Aristotle b) John Ray
c) Carolus Linnaeus d) Charles Darwin **[Ans. (b)]**

45. "Historia Generalis Plantarum" book was written by ____.

a) Aristotle b) John Ray
c) Carolus Linnaeus d) Charles Darwin **[Ans. (b)]**

46. "Systema naturae" book was written by _____.

a) Aristotle b) John Ray
c) Carolus Linnaeus d) Charles Darwin **[Ans. (c)]**

47. "Origin of Species" book was written by _____.

a) Aristotle b) John Ray
c) Carolus Linnaeus d) Charles Darwin **[Ans. (d)]**

48. _____ can be defined as a group of organisms that have similar morphology and physiology and can interbreed to produce fertile offsprings.

a) Species b) Genus
c) Family d) Order **[Ans. (a)]**

49. _____ described species as a group of morphologically similar organisms arising from a common ancestor.

a) Origin of Species
b) Systema naturae
c) Historia Generalis Plantarum
d) Tautonymy **[Ans. (c)]**

50. _____ are based on comparative analysis of the similarities and dissimilarities of organisms.

a) Taxonomical keys b) Museums
c) Zoological parks d) Marine parks **[Ans. (a)]**

51. These are places where wild animals are kept in protected environments under human care.

a) Taxonomical keys b) Museums
c) Zoological parks d) Marine parks **[Ans. (c)]**

52. It measures the degree of genetic similarity between pools of DNA sequences.

a) DNA barcoding b) DNA hybridization
c) DNA fingerprinting d) All of the above **[Ans. (b)]**

2 ANIMAL KINGDOM

EVALUATION

1. **The symmetry exhibited in cnidarians is**
   a. Radial b. Bilateral
   c. Pentamerous radial d. Asymmetrical **[Ans. (a)]**

2. **Sea anemone belongs to phylum**
   a. Protozoa b. Porifera
   c. Coelenterata d. Echinodermata **[Ans. (c)]**

3. **The excretory cells that are found in platyhelminthes are**
   a. Protonephridia b. Flame cells
   c. Solenocytes d. All of these **[Ans. (b)]**

4. **In which of the following organisms, self fertilization is seen.**
   a. Fish b. Round worm
   c. Earthworm d. Liver fluke **[Ans. (d)]**

5. **Nephridia of Earthworms are performing the same functions as**
   a. Gills of prawn
   b. Flame cells of Planaria
   c. Trachea of insects
   d. Nematoblasts of Hydra **[Ans. (b)]**

6. **Which of the following animals has a true coelom ?**
   a. Ascaris b. Pheretima
   c. Sycon d. Taenia solium **[Ans. (b)]**

7. **Metameric segmentation is the main feature of**
   a. Annelida
   b. Echinodermata
   c. Arthropoda
   d. Coelenterata **[Ans. (a)]**

8. In Pheretima locomotion occurs with help of

a. circular muscles
b. longitudinal muscles and setae
c. circular, longitudinal muscles and setae
d. parapodia **[Ans. (c)]**

9. Which of the following have the highest number of species in nature?

a. Insects b. Birds
c. Angiosperms d. Fungi **[Ans. (a)]**

10. Which of the following is a crustacean?

a. Prawn b. Snail
c. Sea anemone d. Hydra **[Ans. (a)]**

11. The respiratory pigment in cockroach is

1. The respiratory pigment in cockroach is

a. Haemoglobin b. Haemocyanin
c. Haemoerythrin d. None of the above **[Ans. (d)]**

2. Exoskeleton of which phylum consists of chitinous cuticle?

a. Annelida b. porifera
c. Arthropoda d. Echinodermata **[Ans. (c)]**

3. Lateral line sense organs occur in

a. Salamander b. Frog
c. Water snake d. Fish **[Ans. (d)]**

4. The limbless amphibian is

a. Icthyophis b. Hyla
c. Rana d. Salamander **[Ans. (a)]**

5. Four chambered heart is present in

a. Lizard b. Snake
c. Scorpion d. Crocodile **[Ans. (d)]**

6. Which of the following is not correctly paired?

a. Humans – Ureotelic b. Birds – Uricotelic
c. Lizards – Uricotelic d. Whale – Ammonotelic **[Ans. (d)]**

7. Which of the following is an egg laying mammal?

a. Delphinus b. Macropus
c. Ornithorhynchus d. Equus **[Ans. (c)]**

8. Pneumatic bones are seen in

a. Mammalia b. Aves
c. Reptilia d. Sponges **[Ans. (b)]**

9. Match the following columns and select the correct option.

Column – I	Column – II
(p) Pila	(i) Devil fish
(q) Dentalium	(ii) Chiton
(r) Chaetopleura	(iii) Apple snail
(s) Octopus	(iv) Tusk shell

a. p – (ii), q – (i), r – (iii), s – (iv)
b. p – (iii), q – (iv), r – (ii), s – (i)
c.p – (ii), q – (iv), r – (i), s – (iii)
d.p – (i), q – (ii), r – (iii), s – (iv) **[Ans. (b)]**

10. In which of the following phyla, the adult shows radial symmetry but the larva shows bilateral symmetry?

a. Mollusca b. Echinodermata
c. Arthropoda d. Annelida **[Ans. (b)]**

11. Which of the following is correctly matched?

a. Physalia - Portugese man of war
b. Pennatula - Sea fan
c. Adamsia - Sea pen
d. Gorgonia - Sea anemone **[Ans. (a)]**

ADDITIONAL

12. They have a body plan in which the body parts are organised in a circle around an axis.

a) Asymmetrical b) Diploblastic
c) Bilateral d) Triploblastic **[Ans. (b)]**

13. Name the organization found in sponges.

a) Acellularlevel b) Cellular level
c) Tissue level d) Organ level **[Ans. (b)]**

14. In sponges, the outer layer is formed of

a) Pinacocytes b) Choanocytes
c) Chaoanoflagellates d) All of the above **[Ans. (a)]**

15. In some animals, cells that perform similar functions are aggregated to form tissues.

a) Acellularlevel Organisation
b) Cellular level Organisation
c) Tissue level Organisation
d) Organ levelOrganisation **[Ans. (c)]**

16. The formation of ___ is the first step towards evolution of body plan in sponges.

a) cells b) tissues
c) organs d) organ systems **[Ans. (b)]**

17. It appears for the first time in the Phylum Platyhelminthes and seen in other higher phyla.

a) Acellularlevel of Organisation
b) Cellular level of Organisation
c) Tissue level of Organisation
d) Organ level of Organisation **[Ans. (d)]**

18. Which character is not included in Sponges?

a) They possess a water transport system or canal system
b) Water enters through minute pores called ostialining the body wall
c) Cnidoblasts are used for anchorage, defense, and to capture the prey
d) Water enters into a central cavity (spongocoel)and goes out through the osculum

[Ans. (c)]

19. Triploblastic animals like echinoderms (e.g., starfish) have five planes of symmetry and show

a) Asymmetrical b) Pentamerous radial symmetry
c) Biradial symmetry d) Radial symmetry **[Ans. (b)]**

20. Which character is not included in Cnidarians?

a) The polyp forms are sessile and cylindrical
b) The medusa are umbrella shaped and free swimming
c) Reproduce asexually by fragmentation or gemmule formation and sexually by the formation of gametes
d) Exhibit alternation of generations in their life cycle (Metagenesis).

[Ans. (c)]

21. Mention the function of lasso cells or colloblasts.

a) Respiration b) Capturing food
c) Circulation d) Excretion **[Ans. (b)]**

22. Which character is not included in Ctenophora?

a) Digestion is both extracellular and intracellular
b) Sexes are not separate (monoecious)
c) Polyps produce medusa asexually and medusa forms polyps sexually
d) They reproduce only by sexual means

[Ans. (c)]

23. Which character is not included in Annelida?

a) The longitudinal and circular muscles in the body wall
b) Body is covered by chitinous exoskeleton
c) Have lateral appendages called parapodia
d) Chitinous setae and suckers **[Ans. (b)]**

24. Which is the character of class Osteichthyes?

a) Skin is covered by ganoid, cycloid or ctenoid scales
b) Helps in gaseous exchange and for maintaining buoyancy
c) A ventrally placed two chambered heart
d) All of the above **[Ans. (d)]**

25. Find odd one out – Viviparous

a) Platypus b)Kangaroo
c) Pigeon d) Parrot **[Ans. (b)]**

26. Symmetry is Cnidaria is

a) radial b) bilateral
c) pentamerous d) spherical **[Ans. (a)]**

27. Medusa is the reproductive organs of

a) hydra b) aurelia
c) obelia d) sea anemone **[Ans. (b)]**

28. Metameric segmentation is the main feature of

a) annelida b) Echinodermata
c) arthropoda d) coelenterate **[Ans. (a)]**

29. Tube feet are the locomotory organs of

a) platyhelminthes b) Echinodermata
c) Mollusca d) arthropoda **[Ans. (b)]**

30. Excretory organ of Platyhelminthes is

a) gills b) flame cells
c) nephridia d) trachea **[Ans. (b)]**

31. Ambulacral system is mainly useful for

a) locomotion b) feeding
c) circulation d) defence **[Ans. (b)]**

32. Choanocytes perform

a) reproduction b) nutrition
c) secretion of spicules d) excretion **[Ans. (b)]**

33. Collar cells are found in

a) aschelminthes b) cnidaria
c) arthropoda d) sponges **[Ans. (d)]**

34. Four chambered heart is present in

a) frog b) crocodile
c) shark d) lizard **[Ans. (b)]**

35. The arrangement of ear ossicles in mammalian ear is

a) stapes, malleus, incus
b) malleus, incus, stapes
c) incus, malleus, stapes
d) columella, malleus, incus **[Ans. (b)]**

36. Osphradium is meant for

a) excretion
b) nutrition
c) selection and rejection of food
d) grinding of food **[Ans. (c)]**

3 TISSUE LEVEL OF OGRANISATION

EVALUATION

1. **The main function of the cuboidal epithelium is**
   a. Protection b. Secretion
   c. Absorption d. Both (b) and (c) **[Ans. (d)]**

2. **The ciliated epithelium lines the**
   a. Skin b. Digestive tract
   c. Gall bladder d. Trachea **[Ans. (d)]**

3. **What type of fibres are found in connective tissue matrix?**
   a. Collagen b. Areolar
   c. Cartilage d. Tubular **[Ans. (a)]**

4. **Prevention of substances from leaking across the tissue is provided by**
   a. Tight junction b. Adhering junction
   c. Gap junction d. Elastic junction **[Ans. (a)]**

5. **Non-shivering thermogenesis in neonates produces heat through**
   a. White fat b. Brown fat
   c. Yellow fat d. Colourless fat **[Ans. (b)]**

ADDITIONAL

6. **Groups of cells that are similar in structure ____.**
   a. Tissues b) Organs
   c) Living fabrics d) Organ systems **[Ans. (a)]**

7. **The tissues are called the ____.**
   a) Tissues b) Organs
   c) Living fabrics d) Organ systems **[Ans. (c)]**

8. ____found in the organs of absorption, secretion and filtration.

a) Simple epithelium b) Squamous epithelium
c) Columnar epithelium d) Cuboidal epithelium **[Ans. (a)]**

9. ____found in the kidney glomeruli, air sacs of lungs, lining of heart, blood vessels.

a) Simple epithelium b) Squamous epithelium
c) Columnar epithelium d) Cuboidal epithelium **[Ans. (b)]**

10. ____found in the kidney tubules, ducts and secretory portions of small glands.

a) Simple epithelium b) Squamous epithelium
c) Columnar epithelium d) Cuboidal epithelium **[Ans. (d)]**

11. The presence of ____on the apical surface of the absorptive cells.

a) Microvilli b) Non-ciliated epithelium type
c) Ciliated epithelium d) Goblet cell **[Ans. (a)]**

12. ____ secretes the protective lubricating mucus.

a) Microvilli b) Goblet cell
c) Ciliated epithelium d) Non-ciliated epithelium type
[Ans. (b)]

13. ____ lines the small bronchioles, fallopian tubes and uterus.

a) Microvilli
b) Goblet cell
c) Ciliated epithelium
d) Non-ciliated epithelium type **[Ans. (c)]**

14. ___ lines most of the digestive tract, gall bladder and secretory ducts of glands.

a) Microvilli
b) Goblet cell
c) Ciliated epithelium
d) Non-ciliated epithelium type **[Ans. (d)]**

15. ___appears to be multi-layered because the nuclei lie at different levels.

a) Pseudo-stratified epithelial
b) Glandular epithelium
c) Goblet cells
d) Salivary gland **[Ans. (a)]**

16. _____cells get specialized for secretion.

a) Pseudo-stratified epithelial
b) Glandular epithelium
c) Goblet cells
d) Salivary gland **[Ans. (b)]**

17. ___secrete mucus, saliva, digestive enzymes and other cell products.

a) Exocrine glands
b) Endocrine glands
c) Compound epithelium
d) Keratinized squamous epithelium type **[Ans. (a)]**

18. ___mostly found in the ducts of sweat glands and mammary glands.

a) Non-keratinized squamous epithelium type
b) Stratified cuboidal epithelium
c) Stratified columnar epithelium
d) Transitional Epithelium **[Ans. (b)]**

19. _____help to stop substances from leaking across a tissue.

a) Tight junctions b) Adhering junctions
c) Gap junctions d) Connective tissue **[Ans. (a)]**

20. _____ perform cementing to keep neighbouring cells together.

a) Tight junctions b) Adhering junctions
c) Gap junctions d) Connective tissue **[Ans. (b)]**

21. _____facilitate the cells to communicate with each other.

a) Tight junctions b) Adhering junctions
c) Gap junctions d) Connective tissue **[Ans. (c)]**

22. _____includes fat and the fibrous tissue of ligaments.

a) Tight junctions b) Adhering junctions
c) Gap junctions d) Connective tissue **[Ans. (d)]**

23. The _____of connective tissue provide support.

a) Connective tissues b) Fibres
c) Loose connective tissues d) Dense connective tissues
[Ans. (b)]

24. _____ are Areolar, Adipose and Reticular.

a) Connective tissues
b) Fibres
c) Loose connective tissues
d) Dense connective tissues **[Ans. (c)]**

25. ____ are dense regular, dense irregular and elastic.

a) Connective tissues
b) Fibres
c) Loose connective tissues
d) Dense connective tissues **[Ans. (d)]**

26. ____ include cartilage, bone and blood.

a) Specialized connective tissues
b) Areolar connective tissue
c) Tissue fluid
d) Adipose tissue **[Ans. (a)]**

27. While fasting, _____ maintains life by producing and supplying energy as fuel.

a) Adipocytes b) Adipose tissue
c) Brown fat d) White fat **[Ans. (b)]**

28. Fibres and fibroblasts are compactly packed in the _____.

a) Reticular connective tissue
b) Dense connective tissues
c) Dense regular connective tissues
d) Dense irregular connective tissues **[Ans. (b)]**

29. ____affects collagen and results in facial abnormalities.
a) Stickler syndrome b) Rhabdomyosarcoma
c) Rheumatoid arthritis d) Sjogren's syndrome [**Ans. (a)**]

30. Progressive inability to secrete saliva and tears ____.
a) Stickler syndrome b) Rhabdomyosarcoma
c) Rheumatoid arthritis d) Sjogren's syndrome [**Ans. (d)**]

31. ____is an examination of tissue or liquid removed from a living body.
a) Biopsy b) Autopsy
c) Skeletal muscle tissue d) Smooth muscle [**Ans. (a)**]

32. ____ degenerative disorder of the nervous system.
a) Cardiac muscle tissue b) Parkinson's disease
c) Alzheimer's disease d) Nervous tissue [**Ans. (b)**]

33. ____ is a chronic neurodegenerative disease.
a) Cardiac muscle tissue b) Parkinson's disease
c) Alzheimer's disease d) Nervous tissue [**Ans. (c)**]

34. ____a triple helix protein which allows for great tensile strength.
a) Acinus b) Collagen
c) Lacunae d) Macrophages [**Ans. (b)**]

4 ORGAN AND ORGAN SYSTEM IN ANIMALS

EVALUATION

1. The clitellum is a distinct part in the body of earthworm Lampito mauritii, it is found in?

a. Segments 13 - 14 b. Segments 14 - 17
c. Segments 12 - 13 d. Segments 14 – 16 **[Ans. (b)]**

2. Sexually, earthworms are

a. Sexes are separate
b. Hermaphroditic but not self - fertilizing
c. Hermaphroditic and self – fertilizing
d. Parthenogenic **[Ans. (b)]**

3. To sustain themselves, earthworms must guide their way through the soil using their powerful muscles. They gather nutrients by ingesting organic matter and soil, absorbing what they need into their bodies. Say whether the statement is true or false: The two ends of the earthworm can equally ingest soil.

a. True b. False **[Ans. (b)]**

4. The head region of Cockroach _____ pairs of _____ and _____ shaped eyes occur.

a) One pair, sessile compound and kidney shaped
b) Two pairs, stalked compound and round shaped
c) Many pairs, sessile simple and kidney shaped
d) Many pairs, stalked compound and kidney shaped

[Ans. (a)]

5. The location and numbers of malpighian tubules in Periplaneta.

a. At the junction of midgut and hindgut, about 150.

b. At the junction of foregut and midgut, about 150.
c. Surrounding gizzard, eight.
d. At the junction of colon and rectum, eight. **[Ans. (a)]**

6. The type of vision in Cockroach is
a. Three dimensional
b. Two dimensional
c. Mosaic
d. Cockroach do not have vision **[Ans. (c)]**

7. How many abdominal segments are present in male and female Cockroaches?
a. 10, 10 b. 9, 10
c. 8, 10 d. 9, 9 **[Ans. (a)]**

8. Which of the following have an open circulatory system?
a) Frog b) Earthworm
c) Pigeon d) Cockroach **[Ans. (d)]**

9. Buccopharyngeal respiration in frog
a. is increased when nostrils are closed
b. Stops when there is pulmonary respiration
c. is increased when it is catching fly
d. stops when mouth is opened. **[Ans. (b)]**

10. Kidney of frog is
a. Archinephros b. Mesonephros
c. Pronephros d. Metanephros **[Ans. (b)]**

11. Presence of gills in the tadpole of frog indicates that
a. fishes were amphibious in the past
b. fishes evolved from frog -like ancestors
c. frogs will have gills in future
d. frogs evolved from gilled ancestor **[Ans. (d)]**

12. Choose the wrong statement among the following:
a. In earthworm, a pair of male genital pore is present.
b. Setae help in locomotion of earthworms.

c. Muscular layer in the body wall of earthworm is made up of circular muscles and longitudinal muscles.
d. Typhlosole is part of the intestine of earthworm. [**Ans. (c)**]

13. Which of the following are the sense organs of Cockroach?
a. Antennae, compound eyes, maxillary palps, anal cerci
b. Antennae, compound eye, maxillary palps and tegmina
c. Antennae, ommatidia, maxillary palps, sternum and anal style
d. Antennae, eyes, maxillary palps, tarsus of walking legs and coxa

[**Ans. (a)**]

ADDITIONAL

14. _____are surface dwellers.
a) Frog b) Earthworms
c) Epigeics d) Anecics [**Ans. (c)**]

15. Earthwormdivides it into a number of compartments called segments or ____.
a) Endogeics b) Lampito mauritii
c) Porphyrin d) Metameres [**Ans. (d)**]

16. An earthworm is divided 14th – 17th segments_____ region.
a) Setigerous sac b) Pre clitellar
c) Clitellar d) Post – clitellar [**Ans. (c)**]

17. The ___communicates to the exterior through the dorsal pores.
a) Dorsal pores b) Coelomic fluid
c) Female genital aperture d) Male genital apertures [**Ans. (b)**]

18. A body cavity called the ___is seen between the alimentary canal and the body wall.
a) Microchaetus rappi b) Drawida nilamburansis
c) Coelom d) Coelomocytes [**Ans. (c)**]

19. The coelom contains the coelomic fluid and serves as a ____.

a) Hydrostatic skeleton b) Kalin
c) Intestine d) Typhlosole **[Ans. (a)]**

20. In Metaphire posthuma, the 26th segment has a pair of short conical out growths___.

a) Intestinal caecae b) Vermicasts
c) Respiratory organs d) Oxygen **[Ans. (a)]**

21. ____exhibits a closed type of blood vascular system.

a) Lampito mauritii b) Paired valves
c) Ventral vessel d) Lateral hearts **[Ans. (a)]**

22. The bilobed mass of nervous tissue called ____.

a) Supra - pharyngeal ganglia
b) Tufted nephridia
c) Integumentary nephridia
d) Septal nephridia **[Ans. (a)]**

23. Special cells on the coelomic wall of the intestine, called ___ are present.

a) Nephrostome b) Chloragogen cells
c) Monoecious d) Protandrous **[Ans. (b)]**

24. The ___run upto the 18th segment.

a) Spermatogonia b) Ciliary rosettes
c) Vasa deferentia d) Prostate gland **[Ans. (c)]**

25. If earthworm gets cut after the 20th segment, the anterior half can ____.

a) 20 segments b) Regenerate
c) Oviducts d) Spermathecae **[Ans. (b)]**

26. The prostate gland serves to cement the spermatozoa into bundles ___.

a) Spermatophores b) Cocoons
c) 2 – 3 weeks d) Direct **[Ans. (a)]**

27. The cocoons have an incubation period of about 14- 18 days after they hatch to ___.

a) Juveniles b) Non-clitellate
c) Clitellate d) 60 days **[Ans. (a)]**

28. Vermiculture, vermicomposting, vermiwash and wormery are collectively ____.

a) Vermitech b) Vermiculture
c) Vermicomposting d) Vermiwash **[Ans. (a)]**

29. ____is used as a foliar spray and helps to induce plant growth.

a) Vermitech b) Vermiculture
c) Vermicomposting d) Vermiwash **[Ans. (d)]**

30. Earthworms are also used as bait in ____.

a) Fishing b) Cockroach
c) Cursorial d) Vectors **[Ans. (a)]**

31. The sclerites of the dorsal side are called ____.

a) Sclerites b) Tergites
c) Sternites d) Pleurites **[Ans. (b)]**

32. The mouth parts are directed downwards so it is ____.

a) Hypognathous b) Orthopterus
c) Hypopharynx d) Prothoracic **[Ans. (a)]**

33. Due to the presence of three pairs of walking legs it is also called ___.

a) Cervicum b) Hexapoda
c) Tarsomeres d) Tegmina **[Ans. (b)]**

34. ___ are used in flight.

a) Metathorax b) Tergum
c) Sternum d) Boat **[Ans. (a)]**

35. In males, the ___lies at the hind end of the abdomen.

a) Genital pouch b) Gonapophysis
c) Anal styles d) Anal cerci **[Ans. (a)]**

36. Male bears a pair of short and slender ____in the 9th sternum.

a) Genital pouch b) Gonapophysis
c) Anal styles d) Anal cerci **[Ans. (c)]**

37. ___ is used for storing food.

a) Gynovalvular plates b) Foregut
c) Crop d) Proventriculus **[Ans. (c)]**

38. At the junctional region of the gizzard are eight fingers like ____.

a) Gizzard b) Enteric caecae
c) Malphigian tubules d) Hindgut **[Ans. (b)]**

39. Terminal branches of tracheal tubes are called ___.

a) Salivary glands b) Trachea
c) Stigmata d) Tracheoles **[Ans. (d)]**

40. Respiratory system of cockroach is formed of ____.

a) Spiracular muscles b) Spiracles
c) Open type d) Haemolymph **[Ans. (a)]**

41. The triangular muscles are responsible for blood circulation ____.

a) Haemocytes b) 13 chambers
c) Alary muscles d) Pulsatile vesicle **[Ans. (a)]**

42. The brain is mainly a sensory and an _____.

a) Supra-oesophagial ganglion
b) Endocrine centre
c) Sub-oesophageal ganglion
d) Circum–oesophageal **[Ans. (b)]**

43. ____ with more sensitivity but less resolution.

a) Ommatidia b) Mosaic vision
c) Malpighian tubules d) Uricotelic **[Ans. (b)]**

44. ____ opens into the anterior part of the ejaculatory duct.

a) Malpighian tubules b) Mushroom shaped gland
c) Seminal vesicles d) Gonapophyses **[Ans. (b)]**

45. Common oviduct known as____, which opens into the genital chamber.

a) Ovarioles b) Vagina
c) Ootheca d) Paurometabolus **[Ans. (b)]**

46. The nymph grows by ___or ecdysis about 13 times to reach the adult form.

a) Moulting b) Allergen
c) Diploptera punctata d) Super food **[Ans. (a)]**

47. Frog is an ___.

a) Rana hexadactyla b) Amphibian
c) Anura d) Poikilothermic **[Ans. (b)]**

48. ___protected by a third transparent eyelid.

a) Nictitating membrane b) Tympanic membranes
c) Cloacal aperture d) Fore limbs **[Ans. (a)]**

49. ____are large, long and consist of thigh, shank and foot.

a) Hind limbs b) Vocal sacs
c) Nuptial pad d) Muscular sticky tongue
[Ans. (a)]

50. The ____is devoid of teeth.

a) Maxillary teeth b) Vomerine teeth
c) Lower jaw d) Oesophagus **[Ans. (c)]**

51. Digestion of food takes place by the action of ____.

a) Liver b) Bilobed
c) Hydrochloric acid d) Chyme **[Ans. (c)]**

52. In water, skin acts as aquatic respiratory organ ____.

a) Cutaneous respiration b) Diffusion
c) Buccal respiration d) Pulmonary respiration
[Ans. (a)]

53. ___is a large, thin walled, on the dorsal side of the heart.

a) Gaseous exchange b) Pericardium
c) Sinus venosus d) Truncus arteriosus **[Ans. (c)]**

54. ____supply blood to the posterior part of the body.

a) Systemic trunk b) Pulmo-cutaneous trunk
c) Carotid d) Blood **[Ans. (a)]**

55. Cerebral hemisphere is called as _____.

a) Autonomic Nervous System
b) Brain
c) Prosencephalon
d) Telencephalon **[Ans. (d)]**

56. The medulla oblongata passes out through the ____.

a) Foramen magnum b) Spinal cord
c) Cranial d) Spinal **[Ans. (a)]**

57. Vasa efferentia arise from each ____.

a) Mesovarium b) Testis
c) Ovisacs d) Tadpole **[Ans. (b)]**

58. A regional epidermal swelling, form the cocoon____.

a) Articular membrane b) Clitellum
c) Cochlea d) Homeothermic **[Ans. (b)]**

5 DIGESTION AND ABSORPTION

EVALUATION

1. Choose the incorrect sentence from the following:

a) Bile juice emulsifies the fat.
b) Chyme is a digestive acidic food in stomach.
c) Pancreatic juice converts lipid into fatty acid and glycerol.
d) Enterokinase stimulates the secretion of pancreatic juice.

[Ans.(c)]

2. What is chyme?

a) The process of conversion of fat into small droplets.
b) The process of conversion of micelles substances of glycerol into fatty droplet.
c) The process of preparation of incompletely digested acidic food through gastric juice.
d) The process of preparation of completely digested liquid food in midgut. **[Ans.(c)]**

3. Which of the following hormones stimulate the production of pancreatic juice and bicarbonate?

a) Angiotensin and epinephrine
b) Gastrin and insulin
c) Cholecystokinin and secretin
d) Insulin and glucagon **[Ans.(c)]**

4. The sphincter of Oddi guards

a) Hepatopancreatic duct b) Common bile duct
c) Pancreatic duct d) Cystic duct **[Ans.(a)]**

5. In small intestine, active absorption occurs in case of

a) Glucose b) Amino acids
c) Na+ d) All the above **[Ans.(d)]**

6. Which one is incorrectly matched?

a) Pepsin – stomach b) Renin – liver
c) Trypsin – intestine d) Ptyalin – mouth **[Ans.(b)]**

7. Absorption of glycerol, fatty acids and monoglycerides takes place by

a) Lymph vessels within villi b) Walls of stomach
c) Colon d) Capillaries within villi
[Ans.(a)]

8. First step in digestion of fat is

a) Emulsification b) Enzyme action
c) Absorption by lacteals d) Storage in adipose tissue
[Ans.(a)]

9. Enterokinase takes part in the conversion of

a) Pepsinogen into pepsin b) Trypsinogen into trypsin
c) Protein into polypetide d) Caseinogen into casein
[Ans.(b)]

10. Which of the following combinations are not matched?

a. Vitamin D - Rickets b. Thiamine - Beriberi
c. Vitamin K - Sterility d. Niacin – Pellagra **[Ans.(c)]**

11. Match column I with column II and choose the correct option

Column – I	Column – II
P) Small intestine	i) Largest factory
Q) Pancreas	ii) Absorption of Water
R) Liver	iii) Carrying electrolytic solution
S) Colon	iv) Digestion and absorption

a. (P-iv) (Q -iii) (R- i) (S – ii)
b. (P-iii) (Q -ii) (R- i) (S – iv)
c. (P-iv) (Q -iii) (R- ii) (S – i)
d. (P-ii) (Q -iv) (R- iii) (S – i) **[Ans.(a)]**

12. Match column I with column II and choose the correct option

Column – I	Column – II
(P) Small intestine	(i) 23 cm
(Q) Large intestine	(ii) 4 meter
(R) Oesophagus	(iii) 12.5 cm
(S) Pharynx	(iv) 1.5 meter

a. (P-iv) (Q -ii) (R- i) (S – iii)
b. (P-ii) (Q -iv) (R- i) (S – iii)
c. (P-i) (Q -iii) (R- ii) (S – iv)
d. (P-iii) (Q -i) (R- ii) (S – iv) **[Ans.(b)]**

13. Match column I with column II and choose the correct option

Column – I	Column – II
(P) Lipase	(i) Starch
(Q) Pepsin	(ii) Cassein
(R) Renin	(iii) Protein
(S) Ptyalin	(iv) Lipid

a. (P-iv) (Q -ii) (R- i) (S – iii)
b. (P-iii) (Q -iv) (R- ii) (S – i)
c. (P-iv) (Q -iii) (R- ii) (S – i)
d. (P-iii) (Q -ii) (R- iv) (S – i) **[Ans.(c)]**

14. Which of the following is not the function of liver?

a) Production of insulin b) Detoxification
c) Storage of glycogen d) Production of bile **[Ans.(a)]**

15. Assertion (A): Large intestine also shows the presence of villi like small intestine.
Reason (B): Absorption of water takes place in large intestine.

a. Both A and B are true and B is the correct explanation of A
b. Both A and B are true but B is not the correct explanation of A
c. A is true but B is false
d. A is false but B is true **[Ans.(d)]**

16. Which of the following is not true regarding intestinal villi?

a) They possess microvilli.
b) They increase the surface area.
c) They are supplied with capillaries and the lacteal vessels.
d) They only participate in digestion of fats. **[Ans.(d)]**

ADDITIONAL

17. What is the name of the process of digestion involves intake of the food?

a) Ingestion b) Digestion
b) Absorption d) Assimilation **[Ans.(a)]**

18. What is the technical term of tooth embedded in a socket in the jaw bone?

a) Thecodont b) Diphyodont
b) Heterodont d) Homodont **[Ans.(a)]**

19. What is the dental formula in man?

a) 2033/1023 b) 0033/3133
c) 3142/3143 d) 2123/2123 **[Ans.(d)]**

20. Mention the technical term tonarrow gap between the gums and enamel and causes inflammation?

a) Tartar b) Calculus
b) Plaque d) Gingivitis **[Ans.(d)]**

21. What does lead to redness and bleeding of the gums and to bad smell?

a) Tartar b) Calculus
b) Plaque d) Gingivitis **[Ans.(d)]**

22. If the cardiac sphincter does not contract properly during the churning action of the stomach the gastric juice with acid may flow back into the oesophagus and cause heart burn, resulting in

a) LES b) COLD
b) GERD d) MALT **[Ans.(c)]**

23. What is the name of sphincter used to prevent regurgitation of food between stomach and duodenum?

a) Sphincter muscle
b) Cardiac sphincter
c) Pyloric sphincter
d) Gastric rugae **[Ans.(c)]**

24. Which is the wall of the small intestine bears crypts between the base of villi?

a) Peyer's patches b) Crypts of Leiberkuhn
c) Vermiform appendix d) Haustra **[Ans.(b)]**

25. What is the name of narrow finger like tubular projections that opens into the colon?

a) Peyer's patches b) Crypts of Leiberkuhn
c) Vermiform appendix d) Haustra **[Ans.(c)]**

26. Which is the outermost layer of stomach?

a) Serosa b) Muscularis
c) Submucosa d) Mucosa **[Ans.(a)]**

27. What is the layer of parasympathetic nerve fibres which controls peristalsis?

a) Serosa b) Muscularis
b) Submucosa d) Mucosa **[Ans.(b)]**

28. What is the daily secretion of saliva from salivary glands?

a) 1000 to 1100ml b) 1000 to 1300ml
c) 1000 to 1500ml d) 1000 to 1700ml **[Ans.(c)]**

29. Which is an intrinsic factor responsible for the absorption of Vitamin B12?

a) Parietal b) Oxyntic
c) Castle's d) Zymogen **[Ans.(c)]**

30. Which is the largest gland in the digestive system?

a) Liver b) Pancreas
c) Spleen d) Salivary **[Ans.(a)]**

31. Which is lubricating agent of mucus?

a) Lysozyme b) Lysosome
c) Glycoprotein d) All of the above **[Ans.(c)]**

32. Which layer generate the movements of the small intestine?

a) Serosa b) Muscularis
c) Submucosa d) Mucosa **[Ans.(b)]**

33. Which does hydrolyse peptide bonds associated with specific amino acids?

a) Trypsin b) Chymotrypsin
c) Chymotrypsinogen d) Enterokinase **[Ans.(b)]**

34. Which is involved in absorption of more amounts of water?

a) Stomach b) Duodenum
c) Small intestine d) Large intestine **[Ans.(d)]**

35. Which is major source of cellular fuel?

a) Carbohydrate b) Protein
c) Lipid d) Vitamin **[Ans.(a)]**

36. Which is best storage of reserved food?

a) Carbohydrate b) Protein
c) Lipid d) Vitamin **[Ans.(c)]**

37. The caloric value of carbohydrate is

a) 4.1 b) 9.45
c) 5.65 d) 9.1 **[Ans.(a)]**

38. Which is reverse peristalsis?

a) Vomiting b) Jaundice
c) Liver cirrhosis d) Gall stones **[Ans.(a)]**

39. Which is defective liver fail to break down haemoglobin?

a) Vomiting
b) Jaundice
c) Liver cirrhosis
d) Gall stones **[Ans.(b)]**

40. What is the inflammation of the vermiform appendix?

a) Peptic ulcer b) Appendicitis
c) Hiatus hernia d) Diarrhoea **[Ans.(b)]**

41. Name the crypts between the base of villi in the wall of the small intestine?

a) Ampulla of vater b) Bartholin's duct
Crypts of leiberkuhn d) Falciform ligament **[Ans.(c)]**

42. Which sphincter which guard the opening of the ampulla of vater into the duodenum?

a) Sphincter of boydon b) Sphincter of oddi
c) Stenson's duct d) Succusentericus **[Ans.(b)]**

43. Name the duct of parotid gland.

a) Sphincter of boydon b) Sphincter of oddi
c) Stenson's duct d) Succusentericus **[Ans.(c)]**

44. Which is circular folds in the lumen of ileum?

a) Taeniae coli b) Valves of kerkring
c) Wharton's duct d) Succusentericus **[Ans.(b)]**

45. Which of the following is duct of sub-maxillary/sub-mandibular gland?

a) Taeniae coli b) Valves of kerkring
c) Wharton's duct d) Succusentericus **[Ans.(c)]**

6 RESPIRTION

EVALUATION

1. Breathing is controlled by

a. cerebrum b. medulla oblongata
c.cerebellum d. pons **[Ans. (b)]**

2. Intercostal muscles are found between the

a. vertebral column b. sternum
c. rib d. glottis **[Ans. (c)]**

3. The respiratory structures of insects are

a. tracheal tubes b. gills
c. green glands d. lungs **[Ans. (a)]**

4. Asthma is caused due to

a. inflammation of bronchus and bronchioles.
b. inflammation of branchiole
c. damage of diaphragm.
d. infection of lungs **[Ans. (a)]**

5. The Oxygen Dissociation Curve is

a. sigmoid b. straight line
c. curved d. rectangular hyperbola **[Ans. (a)]**

6. The Tidal volume of a normal person is

a. 800 mL b. 1200 mL
c. 500 mL d.1100 – 1200 Ml **[Ans. (c)]**

7. During inspiration, the diaphragm

a. expands.
b. unchanged
c. relaxes to become domed–shaped.
d. contracts and flattens **[Ans. (d)]**

8. CO2 is transported through blood to lungs as

a. carbonic acid b. oxyhaemoglobin
c. carbamino haemoglobin d. carboxy haemoglobin **[Ans. (c)]**

9. When 1500 mL air is in the lungs, it is called

a. vital capacity b. tidal volume
c. residual volume d. inspiratory reserve volume
[Ans. (c)]

10. Vital capacity is

a. TV + IRV b. TV + ERV
c. RV + ERV d. TV + TRV + ERV **[Ans. (d)]**

11. After a long deep breath, we do not respire for some seconds due to

a. more CO2 in the blood b. more O2 in the blood
c. less CO2 in the blood d. less O2 in the blood **[Ans. (b)]**

12. Which of the following substances in tobacco smoke damage the gas exchange system?

a. carbon monoxide and carcinogens
b. carbon monoxide and nicotine
c. carcinogens and tar
d. nicotine and tar **[Ans. (d)]**

13. Column I represents diseases and column II represents their symptoms. Choose the correctly paired option

Column I		Column II
(P) Asthma		(i) Recurring of bronchitis
(Q) Emphysema		(ii) Accumulation of W.B.CS in alveolus
(R) Pneumonia		(iii) Allergy

a. P = iii, Q = ii, R = i
b. P = iii, Q = i, R = ii
c. P = ii, Q = iii, R = i
d. P = ii, Q = i, R = iii **[Ans. (a)]**

14. Which of the following best describes the process of gas exchange in the lungs?

a. Air moves in and out of the alveoli during breathing.
b. Carbon dioxide diffuses from deoxygenated blood in capillaries into the alveolar air.
c. Oxygen and carbon dioxide diffuse down their concentration gradients between blood and alveolar air.
d. Oxygen diffuses from alveolar air into deoxygenated blood.

[Ans. (c)]

15. Make the correct pairs.

Col–I	Col–II
P) IC	i. maximum volume of air breathes in after forced.
Q) EC	ii. Volume of air present after expiration in lungs.
R) VC	iii. Volume of air inhaled after expiration.
S) FRC	**iv. Volume of air present after expiration in lungs.**

a) (P-i) (Q -ii) (R- iii) (S – iv)
b) (P-ii) (Q -Iii) (R- iv) (S –i)
c) (P-ii) (Q -iii) (R- i) (S – iv)
d) (P-iii) (Q -iv) (R- i) (S – ii) **[Ans. (d)]**

16. Make the correct pairs.

Columan–I		Column–II
(P) Tidal volume		i. 1000 to 1100 ml
(Q) Residual volume		ii. 500 ml
(R) Expiratory reserve volume		iii. 2500 to 3000 ml
(S) Inspiratory reserve volume		iv. 1100 to 1200 ml

(a) P – ii , Q – iv , R – i , S – iii
(b) P – iii , Q – ii , R – iv , S – i
(c) P – ii , Q – iv , R – iii , S – i
(d) P – iii , Q – iv , R – i , S – ii **[Ans. (a)]**

ADDITIONAL

17. Which method of exchange of gases takes place in sponges, coelenterates and flatworms?

a) Diffusion b) Simple diffusion
c) Passive transport d) Active transport [**Ans. (b)**]

18. How is respiration found in arthropods and molluscs?

a) Moist skin b) Tracheal tubes
c) Gills d) Vascularized lungs [**Ans. (c)**]

19. The parts starting from the external nostrils up to the terminal bronchioles constitute

a) Conducting zone b) Respiratory zone
c) Both of these d) None of the above [**Ans. (a)**]

20. Which is meant for gaseous exchange?

a) Pleura b)Trachea
c) Lungs d) Alveoli [**Ans. (d)**]

21. What is role of surfactant?

a) Lowers the surface tension in the alveoli
b) Prevents the lungs from collapsing
c) It also prevents pulmonary oedema
d) All of the above [**Ans. (d)**]

22. What is the breathing rate of healthy human?

a) 10–16 times/minute b) 12–14 times/minute
c) 12–16 times/minute d) 72–80 times/minute [**Ans. (c)**]

23. What is the instrument used to measure the volume of air?

a) Thermometer b) Spirometer
c) Sphygmomanometer d) Stethoscope [**Ans. (b)**]

24. Which is the amount of air inspired or expired with each normal breath?

a) Tidal Volume (TV)
b) Inspiratory Reserve Volume (IRV)
c) Expiratory Reserve Volume (ERV)
d) Residual Volume (RV) [**Ans. (a)**]

25. Additional volume of air a person can inspire by forceful inspiration is called __.

a) Tidal Volume b) Inspiratory Reserve Volume
c) Expiratory Reserve Volume d) Residual Volume

[Ans. (b)]

26. Which is the maximum volume of air that can be moved out during a single breath?

a) Vital capacity b) Inspiratory capacity
c) Expiratory capacity d) Total Lung Capacity **[Ans. (a)]**

27. Which is the total volume of air a person can inhale after normal expiration

a) Vital capacity b) Inspiratory capacity
c) Expiratory capacity d) Total Lung Capacity **[Ans. (b)]**

28. What is the amount of dead space?

a) 100ml b) 150ml
c) 200ml d) 250ml **[Ans. (b)]**

29. What is the molecular weight of Haemoglobin?

a) 66000 dalton b) 67000 dalton
c) 68000 dalton d) 69000 dalton **[Ans. (c)]**

30. Name the enzymeRBCs contain a high concentration.

a) Carbon dioxide b) Carbon monoxide
c) Carbonic anhydras d) Carbonic amylase **[Ans. (c)]**

31. Where is present pneumotaxic centre in the brain?

a) Cerebrum b) Cerebellum
c) Pons varoli d) Medulla oblongata **[Ans. (c)]**

32. Which is the symptom of acute mountain sickness (AMS)?

a) Headache b) Shortness of breath
c) Nausea and dizziness d) All of the above **[Ans. (d)]**

33. Which does common in scuba divers?

a) Nitrogen narcosis b) Shortness of breath
c) Head ache d) Nausea **[Ans. (a)]**

34. What is the effect of suffocation on the skin?

a) Turns bluish b) Turns reddish
c) Turns yellowish d) Turns white **[Ans. (a)]**

35. Which is characterized by narrowing and inflammation of bronchi?

a) Asthma b) Emphysema
c) Pneumonia d) Tuberculosis **[Ans. (a)]**

36. Which is called widening of alveoli?

a) Asthma b) Emphysema
c) Pneumonia d) Tuberculosis **[Ans. (b)]**

37. Which is the inflammation of the lungs due to infection caused by bacteria?

a) Asthma b) Emphysema
c) Pneumonia d) Tuberculosis **[Ans. (c)]**

38. Which does infection mainly occur in the lungs and bones?

a) Asthma b) Emphysema
c) Pneumonia d) Tuberculosis **[Ans. (d)]**

39. Which does temporary stopping of respiration?

a) Apnoea b) Book gills
c) Book lungs d) COLD **[Ans. (a)]**

40. Which is the respiratory organs of Scorpions and most spiders?

a) Apnoea b) Book gills
c) Book lungs d) COLD **[Ans. (c)]**

41. Which is painful respiration?

a) Dyspnoea b) Aphoea
c) Asthma d) Tuber culosis **[Ans. (a)]**

42. Which is the failure of tissues for any reason to receive an adequate supply of oxygen?

a) Hypoxia b) Pneumothorax
c) Vocal cords d) Yawning **[Ans. (a)]**

7 BODY FLUIDS AND CIRCULATION

EVALUATION

1. What is the function of lymph?

a.Transport of O2 into brain
b.Transport of CO2 into lungs
c.Bring interstitial fluid in blood
d.Bring RBC and WBC in lymph node **[Ans. (c)]**

2. Which one of the following plasma proteins is involved in the coagulation of blood?

a. Globulin b. Fibrinogen
c. Albumin d. Serum amylase **[Ans. (b)]**

3. Which of the following WBCs are found in more numbers?

a. Eosinophil b. Neutrophil
c. Basophil d. Monocyte **[Ans. (b)]**

4. Which of the following is not involved in blood clotting?

a. Fibrin b. Calcium
c. Platelets d. Bilirubin **[Ans. (d)]**

5. Lymph is colourless because

a. WBC are absent
b. WBC are present
c. Heamoglobin is absent
d. RBC are absent **[Ans. (d,c)]**

6. Blood group is due to the presence or absence of surface

a. Antigens on the surface of WBC
b. Antibodies on the surface of RBC
c. Antigens of the surface of RBC
d. Antibodies on the surface of WBC **[Ans. (c)]**

7. A person having both antigen A and antigen B on the surface of RBCs belongs to blood group

a. A b. B

c. AB d. O **[Ans. (c)]**

8. Erythroblastosisfoetalis is due to the destruction of

a.Foetal RBCs

b.Foetus suffers from atherosclerosis

c.Foetal WBCs

d.Foetus suffers from mianmata **[Ans. (a)]**

9. Dub sound of heart is caused by

a.Closure of atrio-ventricular valves

b.Opening of semi-lunar valves

c.Closure of semi-lunar values

d.Opening of atrio-ventricular valves **[Ans. (c)]**

10. Why is the velocity of blood flow the lowest in the capillaries?

a. The systemic capillaries are supplied by the left ventricle, which has a lower cardiac output than the right ventricle.

b. Capillaries are far from the heart, and blood flow slows as distance from the heart increases.

c. The total surface area of the capillaries is larger than the total surface area of the arterioles.

d. The capillary walls are not thin enough to allow oxygen to exchange with the cells.

e. The diastolic blood pressure is too low to deliver blood to the capillaries at a high flow rate.

[Ans. (c)]

11. An unconscious patient is rushed into the emergency room and needs a fast blood transfusion. Because there is no time to check her medical history or determine her blood type, which type of blood should you as her doctor, give her?

a. A– b. AB

c. O+ d. O– **[Ans. (d)]**

12. Which of these functions could or could not be carried out by a red blood cell? Briefly justify your answer.

a. Protein synthesis b. Cell division
c. Lipid synthesis d. Active transport **[Ans. (a)]**

13. At the venous end of the capillary bed, the osmotic pressure is

a. Greater than the hydrostatic pressure
b. Result in net outflow of fluids
c. Results in net absorption of fluids
d. No change occurs. **[Ans. (a)]**

14. A patient's chart reveals that he has a cardiac output of 7500mL per minute and a stroke volume of 50 mL. What is his pulse rate (in beats / min)

a. 50 b. 100
c. 150 d. 400 **[Ans. (c)]**

15. At any given time, there is more blood in the venous system than that of the arterial system. Which of the following features of the veins allows this?

a. relative lack of smooth muscles
b. presence of valves
c. proximity of the veins to lymphatic's
d. thin endothelial lining **[Ans. (a)]**

ADDITIONAL

16. The average blood volume is about

a) 5000ml b)5500ml
c) 6000ml d) 6500ml **[Ans. (a)]**

17. Plasma mainly consists of water

a) 72-80% b) 80- 92%
c) 70-80% d) 80-90% **[Ans. (b)]**

18. Which is produced while liver breaking the excess amino acids?

a) Ammonia b) Urea
c) Uric acid d) All of the above **[Ans. (b)]**

19. Which is a hormone secreted by the kidneys in response to low oxygen?

a) Erythropoietin b) Erythropoiesis
c) Haematocrit d) Granulocyte **[Ans. (a)]**

20. Which is expressed the ratio of red blood cells to blood plasma?

a) Erythropoietin b) Erythropoiesis
c)Haematocrit d) Granulocyte **[Ans. (c)]**

21. Which are characterised by the presence of granules in the cytoplasm?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (a)]**

22. Whichare differentiated in the bone marrow?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (a)]**

23. Which arealso called polymorphonuclear cells?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (b)]**

24. Whichhave distinctly bilobed nucleus and the lobes are joined by thin strands?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (c)]**

25. Whichare non-phagocytic and constitute about 2-3% of the total WBCs?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (c)]**

26. Which doesincrease during certain types of parasitic infections and allergic reactions?

a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (c)]**

27. **Which the cytoplasmic granules are large sized, but fewer?**
a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (d)]**

28. **Which secrete substances such as heparin, serotonin and histamines?**
a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (d)]**

29. **Which are also involved in inflammatory reactions?**
a) Granulocyte b) Neutrophils
c) Eosinophils d) Basophils **[Ans. (d)]**

30. **Which are phagocytic cells that are similar to mast cells and have kidney shaped nucleus?**
a) Agranulocytes b) Lymphocyte
c) Monocytes d) Platelets **[Ans. (c)]**

31. **Which of the central nervous system are the 'microglia', in the sinusoids of the liver they are called 'Kupffer cells'?**
a) Agranulocytes b) Lymphocyte
c) Macrophages d) Platelets **[Ans. (c)]**

32. **Which are also called thrombocytes that are produced from megakaryocytes and lack nuclei?**
a) Agranulocytes b) Lymphocyte
c) Monocytes d) Platelets **[Ans. (d)]**

33. **Depending on the presence or absence of ___ on the RBCs, blood group in individual belongs to four different types namely, A, B, AB and O.**
a) Surface antigens b)Natural antibodies
c) Agglutinins d) Glycosyltransferase **[Ans. (a)]**

34. **All agglutinogens contain _____.**
a) Sucrose, D-galactose
b)N-acetyl glucosamine
c) 11 terminal amino acids
d) All of the above **[Ans. (d)]**

35. Which is plasma without fibrinogen?

a) Serum b) Heparin
c) Lymph d) Lymph nodes **[Ans. (a)]**

36. Which are collected in the lymphatic fluid carried via the arterial blood and are recycled back to the lymph?

a) Lymphocytes b) Tunica intima
c) Tunica media d) Tunica externa **[Ans. (a)]**

37. What is the inner layer, supports the vascular endothelium?

a) Lymphocytes b) Tunica intima
c) Tunica media d) Tunica externa **[Ans. (b)]**

38. Which is seen in Arthropods and most Molluscs?

a) Capillaries b) Open circulatory system
c) Coronary artery d) Veins **[Ans. (b)]**

39. The structure of the heart was described by _____ in 1706

a) Raymond de viessens b) William Harvey
c) James Elam d) Peter Safar **[Ans. (a)]**

40. The opening between the right atrium and the right ventricle is guarded by ___.

a) Tricuspid valve b) Bicuspid valve
c) Semilunar valves d) Trabeculaecorneae **[Ans. (a)]**

41. The myocardium of the ventricle is thrown into irregular muscular ridges called

a) Tricuspid valve b) Bicuspid valve
c) Semilunar valves d) Trabeculaecorneae **[Ans. (d)]**

42. Which fibres spread into the ventricles?

a) Bundle of His b) Purkinje fibres
c) Pacemaker d) Stethoscope **[Ans. (b)]**

43. Which is an increased heart rate?

a) Tachycardia b) Bradycardia
c) Ventricular diastole d) Atrial systole **[Ans. (a)]**

44. Which is a decreased heart rate?

a) Tachycardia b) Bradycardia
c) Ventricular diastole d) Atrial systole **[Ans. (b)]**

45. Which is the pressure in the arteries when the heart chambers relax?

a) Ventricular diastole b) Cardiac output
c) Systolic pressure d) Diastolic pressure **[Ans. (d)]**

46. ____ in a coronary artery results in heart attack.

a) Coronary heart disease b) Atherosclerosis
c) Thrombus d) Stroke **[Ans. (c)]**

47. Which is a condition when the blood vessels in the brain bursts?

a) Coronary heart disease b) Atherosclerosis
c) Thrombus d) Stroke **[Ans. (d)]**

48. Which is due to lack of oxygen supply to the heart muscles?

a) Myocardial infarction b) Ischemic heart disease
c) Rheumatic fever d) CPR **[Ans. (b)]**

49. Which is an autoimmune disease which occurs 2-4 weeks after throat infection usually a streptococcal infection?

a) Myocardial infarction b) Ischemic heart disease
c) Rheumatic fever d) CPR **[Ans. (c)]**

50. Circulation of the blood was first described by _____ (1628).

a) William Harvey b) William Harvey
c) James Elam d) Peter Safar **[Ans. (a)]**

51. In 1956, ___ were the first to use mouth to mouth resuscitation.

a) William Harvey b) William Harvey
c) James Elam d) Peter Safar **[Ans. (b)]**

52. Which is associated with the closure of the semilunar valves?

a) Aorta b) Chordate tendineae
c) Lub sound d)Dub sound **[Ans. (d)]**

8 EXCRETION

EVALUATION

1. Concentration of urine depends upon which part of the nephron

a. Bowman's capsule - Isotonic
b. length of Henle's loop - Hypertonic
c. P.C.T. - Isotonic
d. network of capillaries arising from glomerulus – Hypotonic

[Ans. (b)]

2. If Henle's loop were absent from mammalian nephron, which one of the following is to be expected?

a. There will be no urine formation
b. There will be hardly any change in the quality and quantity of urine formed
c. The urine will be more concentrated
d. The urine will be more dilute **[Ans. (d)]**

3. A person who is on a long hunger strike and is surviving only on water, will have

a. Less amino acids in his urine
b. Macula densa cells
c. Less urea in his urine
d. More sodium in his urine **[Ans. (c)]**

4. What will happen if the stretch receptors of the urinary bladder wall are totally removed?

a. Micturition will continue
b. Urine will be continuing to collect normally in the bladder
c. there will be no micturition
d. urine will not collection the bladder **[Ans. (a)]**

5. The end product of Ornithine cycle is

a. carbon dioxide b. uric acid
c. urea d. ammonia **[Ans. (c)]**

6. Identify the wrong match

a. Bowman's capsule	- Glomerular filtration
b. DCT	- Absorption of glucose
c. Henle's loop	- Concentration of urine
d. PCT	- Absorption of Na1 and K1 ions

[Ans. (b)]

7. Podocytes are the cells present on the

a. Outer wall of Bowman's capsule
b. Inner wall of Bowman's capsule
c. Neck of nephron
d. Wall glomerular capillaries **[Ans. (b)]**

8. Glomerular filtrate contains

a. Blood without blood cells and proteins
b. Plasma without sugar
c. Blood with proteins but without cells
d. Blood without urea **[Ans. (a)]**

9. Kidney stones are produced due to deposition of uric acid and

a. silicates b. minerals
c. calcium carbonate d. calcium oxalate **[Ans. (d)]**

10. Animal requiring minimum amount of water to produce urine are

a. ureotelic b. ammonotelic
C. uricotelic d. chemotelic **[Ans. (c)]**

11. Aldosterone acts at the distal convoluted tubule and collecting duct resulting in the absorption of water through

a. Aquaphorins b. spectrins
c. GLUT d. Chloride channels **[Ans. (a)]**

12. The hormone which helps in the reabsorption of water in kidney tubules is

a. cholecystokinin b. angiotensin II
c. antidiuretic hormone d. pancreozymin [**Ans. (c)**]

13. Malpighian tubules remove excretory products from

a. mouth b. oesophagus
c. haemolymph d. alimentary canal. [**Ans. (c)**]

ADDITIONAL

14. The removal of ammonia or other metabolic alternatives such as urea and uric acid

a) Osmotic homeostasis b) Osmoregulators
c) Stenohaline d) Euryhaline [**Ans. (a)**]

15. The animals are able to tolerate wide fluctuations in the salt concentrations

a) Osmotic homeostasis b) Osmoregulators
c) Stenohaline d) Euryhaline [**Ans. (d)**]

16. Animals that excrete most of its nitrogen in the form of ammonia are called

a) Excretory system b) Ammonia
c) Ammonoteles d) Uricoteles [**Ans. (c)**]

17. Mammals and terrestrial amphibians mainly excrete urea and are called

a) Ureoteles b) Earthworms
c) Primitive kidneys d) Kidneys [**Ans. (a)**]

18. Vertebrates have complex tubular organs called ____.

a) Ureoteles b) Earthworms
c) Primitive kidneys d) Kidneys [**Ans. (d)**]

19. Malpighian tubules are the excretory structures in most____.

a) Flame cells b) Solenocytes
c) Nematodes d) Insects [**Ans. (d)**]

20. Antennal glands or green glands perform excretory function in _____.

a) Crustaceans b) Annelida
c) Echinodermata d) Chordata **[Ans. (a)]**

21. The medulla is divided into a few conical tissue masses called _____.

a) Medullary pyramids b) Renal columns of Bertini
c) Renal hilum d) Renal corpuscle **[Ans. (a)]**

22. The endothelium of glomerulus has many pores_____.

a) Fenestrae b) Simple squamous epithelium
c) Podocytes d) Filtration slits **[Ans. (a)]**

23. The ascending limb continues as a highly coiled tubular region in nephron is called the _____.

a) Distal convoluted tubule
b) Collecting duct
c) Juxta medullary nephrons
d) Glomerulus **[Ans. (a)]**

24. The efferent arteriole serving the juxta medullary nephron forms bundles of long straight vessel called _____.

a) Vasa recta b) Cortical nephrons
c) Ornithine cycle d) Glomerular filtration **[Ans. (a)]**

25. The glomerular filtration which is a _____.

a) Passive process b) Active process
c) Glomerular pressure d) Ultrafiltration **[Ans. (a)]**

26. In adults the GFR is approximately _____.

a) 120-125mL/min b) 150-160mL/min
c) 160-170mL/min d) 170-180 L per day **[Ans. (a)]**

27. The solute concentration of a solution of water is _____.

a) Tubular secretion
b) Osmolarity
c) Counter current exchanger
d) Hypothalamus **[Ans. (b)]**

28. The functioning of kidneys is efficiently monitored and regulated by _____.

a) Tubular secretion
b) Osmolarity
c) Counter current exchanger
d) Hypothalamus **[Ans. (d)]**

29. _____ are used to treat high blood pressure.

a) Osmoreceptors
b) ADH
c) Angiotensin Converting Enzyme inhibitors
d) Diabetes insipidus **[Ans. (c)]**

30. Which is characterized by excessive thirst and excretion of large quantities of dilute urine resulting in dehydration and fall in blood pressure?

a) Diabetes insipidus
b) Angiotensin I
c) Angiotensin II
d) Renin- Angiotensin- Aldosterone System **[Ans. (a)]**

31. _____ is characterized by increase in urea.

a) Uremia
b) Renal calculi
c) Pyleothotomy or lithotripsy
d) Glomerulo nephritis **[Ans. (a)]**

32. _____ also called renal stone or nephrolithiasis.

a) Uremia
b) Renal calculi
c) Pyleothotomy or lithotripsy
d) Glomerulo nephritis **[Ans. (b)]**

33. Toxic urea can be removed from the blood by a process _____.

a) Haemodialysis
b) Kidney transplantation
c) Joseph. E
d) Atrial natriuretic peptide **[Ans. (a)]**

34. _____ or water channels are formed by specific plasma membrane proteins in the tubular cells.

a) Aquaporins
b) Bowman's capsule hydrostatic pressure
c) Glomerular capillary pressure
d) Glomerulus [**Ans. (a)**]

35. ___supply the renal tissue, involved in exchanges with the fluid in the tubular region.

a) Peritubular capillaries
b) Juxtaglomerular apparatus
c) Peritubular capillaries
d) Hypernephroma [**Ans. (a)**]

36. ___ supply the renal tissue, involved in exchanges with the fluid in the tubular region.

a) Peritubular capillaries
b) Juxtaglomerular apparatus
c) Peritubular capillaries
d) Hypernephroma [**Ans. (c)**]

9 LOCOMOTION AND MOVEMENT

EVALUATION

1. **Muscles are derived from**
   a. ectoderm b. mesoderm
   c. endoderm d. neuro ectoderm [**Ans. (b)**]

2. **Muscles are formed by**
   a. myocytes b. leucocytes
   c. osteocytes d. lymphocytes [**Ans. (a)**]

3. **The muscles attached to the bones are called**
   a. skeletal muscle b. cardiac muscle
   c. involuntary muscle d. smooth muscles [**Ans. (a)**]

4. **Skeletal muscles are attached to the bones by**
   a. tendon b. ligament
   c. pectin d. fibrin [**Ans. (a)**]

5. **The bundle of muscle fibres is called**
   a. Myofibrils b. fascicle
   c. sarcomere d. sarcoplasm [**Ans. (b)**]

6. **The pigment present in the muscle fibre to store oxygen is**
   a. myoglobin b. troponin
   c. myosin d. actin [**Ans. (a)**]

7. **The functional unit of a muscle fibre is**
   a. sarcomere b. sarcoplasm
   c. myosin d. actin [**Ans. (a)**]

8. **The protein present in the thick filament is**
   a. myosin b. actin
   c. pectin d. leucin [**Ans. (a)**]

9. The protein present in the thin filament is

a. myosin b. actin
c. pectin d. leucin **[Ans. (b)]**

10. The region between two successive Z-discs is called a

a. sarcomere b. microtubule
c. myoglobin d. actin **[Ans. (a)]**

11. Each skeletal muscle is covered by

a. epimysium b. perimysium
c. endomysium d. hypomysium **[Ans. (a)]**

12. Knee joint is an example of

a. saddle joint b. hinge joint
c. pivot joint d. gliding joint **[Ans. (b)]**

13. Name of the joint present between the atlas and axis is

a. synovial joint b. pivot joint
c. saddle joint d. hinge joint **[Ans. (b)]**

14. ATPase enzyme needed for muscle contraction is located in

a. actinin b. troponin
c. myosin d. actin **[Ans. (c)]**

15. Synovial fluid is found in

a. Ventricles of the brain b. Spinal cord
c. immovable joint d. freely movable joints. **[Ans. (d)]**

16. Inflammation of joints due to accumulation of uric acid crystals is called as

a. Gout b. myasthenia gravis
c. osteoporosis d. osteomalacia **[Ans. (a)]**

17. Acetabulum is located in

a. collar bone b. hip bone
c. shoulder bone d. thigh bone **[Ans. (b)]**

18. Appendicular skeleton is

a. girdles and their limbs b. vertebrae
c. skull and vertebral column d. ribs and sternum **[Ans. (a)]**

19. The type of movement exhibits by the macrophages are

a. flagellar b. ciliary
c. muscular d. amoeboid **[Ans. (d)]**

20. The pointed portion of the elbow is

a. acromion process b. glenoid cavity
c. olecranon process d. symphysis **[Ans. (c)]**

ADDITIONAL

21. Which type of movement occurs in the respiratory passages and genital tracts?

a) Macrophages b) Ciliary movement
c) Flagellar movement d) Muscular movement **[Ans. (b)]**

22. _____ movement of hands, legs, jaws, tongue are caused by the contraction and relaxation of the muscle.

a) Macrophages b) Ciliary movement
c) Flagellar movement d) Muscular movement **[Ans. (d)]**

23. Muscles are specialized tissues which are derived from the embryonic _____.

a) Mesoderm b) Myocytes
c) Tendon d) Fascicle **[Ans. (a)]**

24. Skeletal muscle is attached to the bone by a bundle of collagen fibres known as_____.

a) Mesoderm b) Myocytes
c) Tendon d) Fascicle **[Ans. (c)]**

25. The covering around each fascicle is the _____.

a) Epimysium b) Perimysium
c) Endomysium d) Sarcolemma **[Ans. (b)]**

26. The cytoplasm of the muscle fibre is called the _____.

a) Sarcoplasm b) Myoglobin
c) Glycosomes d) Anisotropic bands **[Ans. (a)]**

27. Which is a red coloured respiratory pigment of the muscle fibre?
a) Sarcoplasm b) Myoglobin
c) Glycosomes d) Anisotropic bands **[Ans. (b)]**

28. Each H-zone is bisected vertically by a dark line called the ___.
a) Isotropic bands b) H-Zone
c) M-line d) Z–disc **[Ans. (c)]**

29. Which is the functional unit of the skeletal muscle?
a) Sarcomere b) Actin
c) Meromyosin d) G–actin **[Ans. (a)]**

30. ____ is a polymer of monomeric G-actins.
a) F-actin
b) Andrew F. Huxley and Rolf Niedergerke
c) Contraction
d) Acetylecholine **[Ans. (a)]**

31. Which is a nucleotide molecule consisting of adenine, riboseand three phosphate molecules?
a) Adenosine triphosphate b) Adenosine Mono Phosphate
c) Adenosine diphosphate d) Actin molecule **[Ans. (a)]**

32. The oxidative fibres are termed as _____.
a) Red muscle fibres b) Glycolytic fibres
c) White muscle fibres d) Cartilage **[Ans. (a)]**

33. Which is the lack of myoglobin gives pale colour to the fibres?
a) Red muscle fibres b) Glycolytic fibres
c) White muscle fibres d) Cartilage **[Ans. (c)]**

34. ____ have high myosin ATPase activity and can make large amounts of ATP.
a) Slow – oxidative fibres b) Fast – oxidative fibres
c) Fast – glycolytic fibres d) Slow glycolytic fibres **[Ans. (b)]**

35. ____ fibres are best suited for rapid, intense actions, such as short sprint at maximum speed.
a) Slow – oxidative fibres b) Fast – oxidative fibres
c) Fast – glycolytic fibres d) Hydrostatic skeleton **[Ans. (c)]**

36. Skeletal elements are located upon body surface or in the skin _____.

a) Exoskeleton b) Endoskeleton
c) Brain box d) Auditory meatus **[Ans. (a)]**

37. A single U-shaped_____ is present at the base of the buccal cavity

a) Hyoid bone b) Foramen magnum
c) Atlas d) Sternum **[Ans. (a)]**

38. The first seven pairs of ribs are called 'true ribs' or_____.

a) Vertebro–sternal ribs b) Vertebro-chondral ribs
c) Vertebral ribs d) Acromion **[Ans. (a)]**

39. The skeleton of the arm, the region between the shoulder and elbow is the _____.

a) Humerus b) Glenoid cavity
c) Olecranon process d) Pelvic girdle **[Ans. (a)]**

40. _____ is muscle cell membrane capable of propagating action potentials.

a) Myoglobin b) Sarcolemma
c) Sarcomere d) Ilium **[Ans. (b)]**

41. The ___ is a curved bar of bone.

a) Ischium b) Acetabulum
c) Tarsus d) Metatarsus **[Ans. (a)]**

42. The region where the diaphysis and epiphyses meet is called the _____.

a) Metaphysis b) Periosteum
c) Osteoblasts d) Endosteum **[Ans. (a)]**

43. It is movement takes place along the joints which act as fulcrum of the lever.

a) Lever system
b) Motor neuron
c) Fibrous joints or Synarthroses
d) Cartilaginous joints or Amphiarthroses **[Ans. (a)]**

44. ___ are freely movable joints, the articulating bones are seperated by a cavity.

a) Synovial joints or Diarthroses joints
b) Myasthenia gravis
c) Tetany
d) Muscle fatigue **[Ans. (a)]**

45. ___rapid muscle spasms occur in the muscles due to deficiency of parathyroid hormone.

a) Synovial joints or Diarthroses joints
b) Myasthenia gravis
c) Tetany
d) Muscle fatigue **[Ans. (c)]**

46. _____ is actually a muscle tear.

a) Atrophy b) Muscle pull
c) Arthritis d) Osteoarthritis **[Ans. (b)]**

47. _____is inflammation of joints due to accumulation of uric acid crystals.

a) Rheumatoid arthritis b) Gouty arthritis or gout
c) Osteoporosis d) Endurance **[Ans. (b)]**

48. _____ make the muscles stronger.

a) Strength exercises b) Myasthenia gravis
c) Metaphysis d) Muscle pull **[Ans. (a)]**

49. _____ help to prevent falls which is a common problem in older adults.

a) Myasthenia gravis b) Balance exercises
c) Metaphysis d) Muscle pull **[Ans. (b)]**

50. _____ help to stretch body muscles for more freedom of joint movements.

a) Muscle pull b) Myasthenia gravis
c) Flexibility exercises d) Myasthenia gravis **[Ans. (c)]**

10 NEURAL CONTROL AND COORDINATION

EVALUATION

1. Which structure in the ear converts pressure waves to action potentials?

a. Tympanic membrane b. Organ of Corti
c. Oval window d. Semicircular canal **[Ans. (b)]**

2. Which of the following pairings is correct?

a. Sensory nerve – afferent b. Motor nerve – afferent
c. Sensory nerve – ventral d. Motor nerve – dorsal **[Ans. (a)]**

3. During synaptic transmission of nerve impulse, neurotransmitter (P) is released from synaptic vesicles by the action of ions (Q). Choose the correct P and Q.

a. P = Acetylcholine, Q = Ca++
b. P = Acetylcholine, Q = Na+
c. P = GABA, Q=Na+
d. P = Cholinesterase, Q = Ca++ **[Ans. (a)]**

4. Examine the diagram of the two cell types A and B given below and select the correct option.

a. Cell-A is the rod cell found evenly all over retina
b. Cell-A is the cone cell more concentrated in the fovea centralis
c. Cell-B is concerned with colour vision in bright light
d. Cell-A is sensitive to bright light intensities **[Ans. (c)]**

5. Assertion: The imbalance in concentration of Na+, K+ and proteins generates action potential. Reason: To maintain the unequal distribution of Na+ and K+, the neurons use electrical energy.

a. Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.

b. Both Assertion and Reason are true but the Reason is not the correct explanations of Assertion.
c. Assertion is true, but Reason is false.
d. Both Assertion and Reason are false. **[Ans. (c)]**

6. Which part of the human brain is concerned with the regulation of body temperature?
a. Cerebellum b. Cerebrum
c. Medulla oblongata d. Hypothalamus **[Ans. (d)]**

7. The respiratory centre is present in the
a. Medulla oblongata b. Hypothalamus
c. Cerebellum d. Thalamus **[Ans. (a)]**

8. Match the following human spinal nerves in column I with their respective number in column II and choose the correct option

COLUMN I	COLUMN II
P. Cervical nerves	i. 5 pairs
Q. Thoracic nerve	ii. 1 pair
R. Lumbar nerve	iii. 12 pair
S. Coccygeal nerve	iv. 8 pair

a. (P-iv),(Q-iii),(R-i),(S-ii)
b. (P-iii), (Q-i), (R-ii), (S-iv)
c. (P-iv),(Q-i),(R-ii),(S-iii)
d. (P-ii), (Q-iv), (R-i), (S-iii) **[Ans. (a)]**

9. Which of the following cranial nerve controls the movement of eye ball?
a. trochlear nerve b. optic nerve
c. Olfactory nerve d. vagus nerve. **[Ans. (b)]**

10. The abundant intracellular cation is
a. H+ b. K+
c. Na+ d. Ca++ **[Ans. (b)]**

11. Which of the following statements is wrong regarding conduction of nerve impulse?

a. In a resting neuron, the axonal membrane is more permeable to K+ ions and nearly impermeable to Na+ ions.

b. Fluid outside the axon has a high concentration of Na+ ions and low concentration of K+, in a resting neuron.

c. Ionic gradients are maintained by Na-K pumps across the resting membrane, which transport 3Na ions outwards for 2K+ into the cell.

d. A neuron is polarized only when the outer surface of the axonal membrane possesses a negative a charge and its inner surface is positively charged.

[Ans. (d)]

12. All of the following are associated with the myeline sheath except

a. Faster conduction of nerve impulses

b. Nodes of Ranvier forming gaps along the axon

c. Increased energy output for nerve impulse conduction

d. Saltatory conduction of action potential **[Ans. (c)]**

13. Several statements are given here in reference to cone cells which of the following option indicates all correct statements for cone cells?

Statements

(i) Cone cells are less sensitive in bright light than Rod cells

(ii) They are responsible for colour vision

(iii) Erythropsin is a photo pigment which is sensitive to red colour light

(iv) They are present in fovea of retina

a. (iii), (ii) and (i)

b. (ii) , (iii) and (iv)

c. (i), (iii) and (iv)

d. (i), (ii) and (iv) **[Ans. (b)]**

14. Which of the following statement concerning the somatic division of the peripheral neural system is incorrect?

a. Its pathways innervate skeletal muscles
b. Its pathways are usually voluntary
c. Some of its pathways are referred to as reflex arcs
d. Its pathways always involve four neurons **[Ans. (d)]**

15. When the potential across the axon membrane is more negative than the normal resting potential, the neuron is said to be in a state of

a. Depolarization
b. Hyperpolarization
c. Repolarization
d. Hypopolarization **[Ans. (c)]**

ADDITIONAL

16. The neural system comprises of highly specialized cells called __.

a) Neurons
b) Sensory functions
c) Motor functions
d) Autonomic functions **[Ans. (a)]**

17. The non-nervous special cells called

a) Neuroglia b) Afferent neurons
c) Efferent neurons d) Interneurons **[Ans. (a)]**

18. The repeatedly branched short fibres coming out of the cell body are called ____.

a) Neurilemma b) Dendrites
c) Nissl's granules d) Axon hillock **[Ans. (b)]**

19. ____is associated only with the axon.

a) Myelin sheath b) Synaptic knob
c) Muscular junction d) Multipolar neurons **[Ans. (a)]**

20. ____ have a single short process and one axon.

a) Bipolar neurons
b) Unipolar neurons
c) Intracellular fluid
d) Resting membrane Potential **[Ans. (b)]**

21. The ionic gradient across the resting membrane is maintained by ATP driven ___.

a) Sodium-Potassium pump
b) Depolarization
c) Threshold potential
d) All or none principle **[Ans. (a)]**

22. The reversal of electrical charge is called _____.

a) Sodium-Potassium pump
b) Depolarization
c) Threshold potential
d) All or none principle **[Ans. (b)]**

23. The reversal of membrane potential inside the axolemma to negative occurs due to _.

a) Repolarisation
b) Hyperpolarization
c) Lazy gates
d) Nodes of Ranvier **[Ans. (a)]**

24. The voltage-gated Na+ and K+ channels are concentrated at the

a) Repolarisation b) Hyperpolarization
c) Lazy gates d) Nodes of Ranvier **[Ans. (d)]**

25. ____that forms a structural gap and a functional bridge between neurons.

a) Pre-synaptic neuron b) Cleft
c) Exocytosis d) Brain **[Ans. (b)]**

26. The ability to sense stimuli arising within the body regarding position, motion and equilibrium ____.

a) Ampulla b) Depolarization
c) Properioception d) Septum pellucidum **[Ans. (c)]**

27. The median thin layer of cranial cavity is _____.
a) Duramater b) Arachnoid mater
c) Piamater d) Subarachnoid space [Ans. (b)]

28. The brain separated from the arachnoid mater by the _____.
a) Duramater b) Arachnoid mater
c) Piamater d) Subarachnoid space [Ans. (d)]

29. _____is the 'seat of intelligence'.
a) Cerebrum b) Cerebral cortex
c) Corpus callosum d) Association areas [Ans. (a)]

30. The hemispheres are connected by a tract of nerve fibres called _____.
a) Cerebrum b) Cerebral cortex
c) Corpus callosum d) Association areas [Ans. (c)]

31. The anterior part of epithalamus is vascular _____.
a) Epithalamus b) Choroid plexus
c) Pineal body d) Melatonin [Ans. (b)]

32. Which regulates sleep and wake cycle?
a) Epithalamus b) Choroid plexus
c) Pineal body d) Melatonin [Ans. (d)]

33. Hypothalamus also acts as the _____.
a) Hypothalamus b) Infundibulum
c) Mammillary bodies d) Satiety centre [Ans. (d)]

34. _____ is the part of the brain between the spinal cord and the diencephalon.
a) Emotional brain b) Brain stem
c) Mid brain d) Corpora quadrigemina [Ans. (b)]

35. Which acts as a reflex centre for vision and hearing?
a) Emotional brain
b) Brain stem
c) Mid brain
d) Corpora quadrigemina [Ans. (d)]

36. The C- shaped space found inside each cerebral hemisphere forms the ____.

a) Lateral ventricles I and II b) Septum pellucidum
c) Aqueduct of Sylvius d) Cerebro spinal fluid

[Ans. (a)]

37. The ventricle III is continuous with the ventricle IV in the hind brain through a canal called ____.

a) Lateral ventricles I and II b) Septum pellucidum
c) Aqueduct of Sylvius d) Cerebro spinal fluid **[Ans. (c)]**

38. The ____ serves the upper limb.

a) Spinal cord b) Caudaequina
c) Cervical enlargement d) Lumbar enlargement **[Ans. (c)]**

39. It transmits impulse from CNS to the effector organ.

a) Sensory Receptor b) Sensory Neuron
c) Interneurons d) Motor Neuron **[Ans. (d)]**

40. The conditioned reflex was first demonstrated by ___.

a) Unconditional reflex b) Conditioned reflex
c) Pavlov d) Cerebral cortex **[Ans. (c)]**

41. Regulation of the visceral organs is ____.

a) Trigeminal nerve b) Trochlear nerve
c) Vagus d) Hypoglossal **[Ans. (c)]**

42. There are 31 pairs of ____.

a) Cranial nerves
b) Spinal nerves
c) Somatic neural system
d) Autonomic neural system **[Ans. (b)]**

43. ____whose cell body is in the brain or spinal cord.

a) Preganglionic neuron
b) Autonomic ganglion
c) Postganglionic neuron
d) Exteroceptors **[Ans. (a)]**

44. ____are located in the visceral organs and blood vessels.

a) Interoceptors b) Proprioceptors
c) Sebaceous glands d) Lacrymal glands **[Ans. (a)]**

45. Fibrous layer of eye is ___.

a) Aqueous humor b) Crystalline
c) Sclera d) Choroid **[Ans. (c)]**

46. The ability of the eyes to focus objects at varying distances is called ____.

a) Retina b) Canal of schlemm
c) Ciliary muscle d) Accommodation **[Ans. (d)]**

47. The affected person can see only the distant objects clearly ____.

a) Fovea centralis b) Blind spot
c) Myopia d) Hypermetropia **[Ans. (d)]**

48. Wax producing sebaceous glands called ____ in the external auditory meatus.

a) Cataract b) Ceruminous glands
c) Middle ear d) Eustachian tube **[Ans. (b)]**

49. The scala media and scala tympani are separated by a membrane called ____.

a) Perilymph b) Basilar membrane
c) Organ of corti d) Stereocilia **[Ans. (b)]**

50. ____ a roof like structure overhanging the organ of corti throughout its length.

a) Tectorial membrane b) 20 times
c) Perilymph d) Conductive deafness **[Ans. (a)]**

51. ___ the defect may be in the organ of Corti.

a) Sensory-neural deafness
b) Otoliths
c) Crista ampullaris
d) Chemoreceptors **[Ans. (a)]**

52. The receptors for taste and smell are the ____.

a) Sensory-neural deafness
b) Otoliths
c) Crista ampullaris
d) Chemoreceptors **[Ans. (d)]**

53. ____ is the sensory organ of touch.

a) Gustatory receptor b) Papillae
c) Gustatory hairs d) Skin **[Ans. (d)]**

54. ___ are small light pressure receptors found just beneath the epidermis.

a) Tactile Markel disc
b) Hair follicle receptors
c) Meissner's corpuscles
d) Pacinian corpuscles **[Ans. (c)]**

55. ____are thermoreceptors that sense temperature.

a) Ruffini endings
b) Krause end bulbs
c) Melanocytes
d) Vitiligo **[Ans. (b)]**

11 CHEMICAL COORDINATION AND INTEGRATION

EVALUATION

1. The maintenance of constant internal environment is referred as

a. Regulation b. homeostasis
c. co-ordination d. hormonal control **[Ans. (b)]**

2. Which of the following are exclusive endocrine glands?

a. Thymus and testis b. adrenal and ovary
c. parathyroid and adrenal d. pancreas and parathyroid
[Ans. (c)]

3. Which of the following hormone is not secreted under the influence of pituitary gland?

a. thyroxine b. insulin
c. oestrogen d. glucocorticoids **[Ans. (b)]**

4. Spermatogenesis in mammalian testes is controlled by

a. Luteinising hormone b. Follicle stimulating hormone
c. FSH and prolactin d. GH and prolactin **[Ans. (b)]**

5. Serum calcium level is regulated by

a. Thyroxine b. FSH
c. Pancreas d. Thyroid and parathyroid
[Ans. (d)]

6. Iodised salt is essential to prevent

a. rickets b. scurvy
c. goitre d. acromegaly **[Ans. (c)]**

7. Which of the following gland is related with immunity?

a. Pineal gland b. adrenal gland
c. thymus d. parathyroid gland **[Ans. (c)]**

8. Which of the following statement about sex hormones is correct?

a. Testosterone is produced by Leydig cells under the influence of luteinizing hormone

b. Progesterone is secreted by corpus luteum and softens pelvic ligaments during child birth

c. Oestrogen is secreted by both sertoli cells and corpus luteum

d. Progesterone produced by corpus luteum is biologically different from the one produced by placenta.

[Ans. (a)]

9. Hypersecretion of GH in children leads to

a. Cretinism b. Gigantism

c. Graves disease d. Tetany **[Ans. (b)]**

10. A pregnant female delivers a baby who suffers from stunted growth, mental retardation, low intelligence quotient and abnormal skin. This is the result of

a. Low secretion of growth hormone

b. Cancer of the thyroid gland

c. Over secretion of pars distalis

d. Deficiency of iodine in diet. **[Ans. (a)]**

11. The structure which connects the hypothalamus with anterior lobe of pituitary gland is the

a. Dendrites of neurohypophysis

b. Axons of neurohypophysis

c. Bands of white fibers from cerebellar region

d. Hypophysial portal system **[Ans. (d)]**

12. Which one of the following statements is correct?

a. Calcitonin and thymosin are thyroid hormones

b. Pepsin and prolactin are secreted in stomach

c. Secretin and rhodopsin are polypeptide hormones

d. Cortisol and aldosterone are steroid hormones **[Ans. (d)]**

13. which of the given option shows all wrong statements for thyroid gland Statements

(i) It inhibits process of RBC formation
(ii) It helps in maintenance of water and electrolytes
(iii) Its more secretion can reduce blood pressure
(iv) It Stimulates osteoblast

(a) (i) and (ii) (b) (iii) and (iv)
(c) (i) and (iv) (d) (i) and (iii) **[Ans. (a)]**

ADDITIONAL

14. Hormones are ____because they act as organic catalysts and coenzymes.

a) Hormones
b) Chemical messengers
c) Homeostasis
d) Endocrine glands **[Ans. (b)]**

15. The hypothalamus along with its neural function also produces hormones and is considered as a ____.

a) Neuro endocrine gland
b) Partial endocrine glands
c) Hypothalamic hypophyseal axis
d) Sellaturcica **[Ans. (a)]**

16. The anterior lobe originates from the embryonic invagination of pharyngeal epithelium called _____.

a) Infundibulam b) Rathke's pouch
c) Pars nervosa d) Growth hormone **[Ans. (b)]**

17. ___ is a peptide hormone that stimulates the adrenal cortex to secrete glucocorticoids and mineralocorticoids.

a) Thyroid Stimulating Hormone
b) Adrenocortico tropic hormone
c) Negative feedback mechanism
d) Follicle stimulating hormone **[Ans. (b)]**

18. _____ stimulates chondrogenesis, osteogenesis.

a) Infundibulam b) Rathke's pouch
c) Pars nervosa d) Growth hormone **[Ans. (d)]**

19. ___ is a glycoprotein hormone which is also known as interstitial cell stimulating hormone.

a) Luteinizing hormone
b) Luteotropic hormone
c) Vasopressin or antidiuretic hormone
d) Oxytocin **[Ans. (a)]**

20. _____is located behind the third ventricle of brain.

a) Conarium b) Melatonin
c) Thyroid gland d) Isthmus **[Ans. (a)]**

21. It is the largest endocrine gland in the body.

a) Conarium b) Melatonin
c) Thyroid gland d) Isthmus **[Ans. (c)]**

22. _____is essential for the normal synthesis of thyroid hormones.

a) Thyrocalcitonin b) Iodine
c) Hypercalcemic d) Thymus gland **[Ans. (b)]**

23. Zona glomerulosa secretes

a) Major metabolic hormones
b) Mineralocorticoids
c) Glucocorticoids
d) Androgen, Oestrogen and glucocorticoids **[Ans. (b)]**

24. _____ is the central part of adrenal gland.

a) Adrenal medulla b) Catecholamines
c) Glucocorticoids d) Cortisol **[Ans. (a)]**

25. _____ stimulates the reabsorption of sodium and water.

a) Mineralocorticoids b) Aldosterone
c) Adrenalin d) Pancreas **[Ans. (b)]**

26. Human pancreas has one to two million _____

a) Acini b) Islets of langerhans
c) Insulin d) Glucagon **[Ans. (b)]**

27. _____ is responsible for the maturation of reproductive organs.

a) Testis b) Leydig cells
c) Ovaries d) Oestrogen **[Ans. (d)]**

28. ____ promotes breast development and initiate menstrual cycle.

a) Oestrogens b) Progesterone
c) Atrial natriuretic factor d) Renin **[Ans. (a)]**

29. _____ is responsible for premenstrual changes in the uterus.

a) Oestrogens b) Progesterone
c) Atrial natriuretic factor d) Renin **[Ans. (b)]**

30. _____ is secreted by juxta glomerular cells.

a) Oestrogens
b) Progesterone
c) Atrial natriuretic factor
d) Renin **[Ans. (d)]**

31. ___is secreted by duodenum in response to the presence of fat and acid.

a) Gastro-intestinal tract b) Gastrin
c) Cholecystokinin d) Secretin **[Ans. (c)]**

32. _____ inhibits gastric secretion and motility.

a) Erythropoietin
b) Calcitriol
c) Gastric inhibitory peptide
d) Dwarfism **[Ans. (c)]**

33. _____ is due to excessive secretion of growth hormone in adults.

a) Gigantism b) Acromegaly
c) Cretinism d) Myxodema **[Ans. (b)]**

34. _____ is also called as thyrotoxicosis.

a) Myxodema b) Grave's disease
c) Simple goiter d) Tetany **[Ans. (b)]**

35. ____ is caused due to the hyposecretion of parathyroid hormone.

a) Myxodema b) Grave's disease
c) Simple goiter d) Tetany **[Ans. (d)]**

36. ____ is caused due to excess PTH in blood.

a) Hyperparathyroidism b) Addison's disease
c) Cushing's syndrome d) Hypoglycaemia **[Ans. (a)]**

37. ____is caused due to excess secretion of cortisol.

a) Hyperparathyroidism b) Addison's disease
c) Cushing's syndrome d) Hypoglycaemia **[Ans. (c)]**

38. ____ means excessive intake of food.

a) Hyperglycaemia b) Polyurea
c) Polyphagia d) Polydipsia **[Ans. (c)]**

39. ____ meansexcessive consumption liquids due to thirst.

a) Hyperglycaemia b) Polyurea
c) Polyphagia d) Polydipsia **[Ans. (d)]**

40. ___ conversion of non- carbohydrate form like amino acids and fat into glucose.

a) Ketosis
b) Gluconeogenesis
c) Diabetes insipidus
d) Feed back mechanisms **[Ans. (b)]**

41. ____ generate the production of second messengers such as cyclic AMP.

a) Peptide hormone b) Hormones
c) Camp d) Signaling cascade **[Ans. (b)]**

42. The effect brought out by Camp within the cell is known as ____.

a) Peptide hormone b) Hormones
c) Camp d) Signaling cascade **[Ans. (d)]**

43. Thyroid hormone is synthesised from

a) Camp b) Phosphodiesterases
c) Tyrosine d) Autonomy **[Ans. (c)]**

44. ___ animals, male and female reproductive organs occur in separate individuals.

a) Alternation of generation b) Dioecious
c) Acidosis d) Catecholamines **[Ans. (b)]**

45. _____ is also known as paleo mammalian brain.

a) Limbic system b) Melanocytes
c) Oxytocin d) Thymus gland **[Ans. (a)]**

46. _____helps during child birth.

a) Limbic system b) Melanocytes
c) Oxytocin d) Thymus gland **[Ans. (c)]**

12 TRENDS IN ECONOMIC ZOOLOGY

EVALUATION

1. Which one of the following is not related to vermiculture?

a. Maintains soil fertility
b. Breakdown of inorganic matter
c. Gives porosity, aeration and moister holding capacity
d. Degradation of non-biodegradable solid waste
a. a and b are correct
b. c and d are correct
c. b and d are not correct
d. a and c are not correct **[Ans. (c)]**

2. Which one of the following is not an endemic species of earthworm?

a. Perionyx b. Lampito
c. Eudrillus d. Octo chaetona **[Ans. (c)]**

3. Match the following :

1. Bombyx mori - a) Champa - I) Muga
2. Antheraea assamensis - b) Mulberry - II) Eri
3. Antheraea mylitta - c) Arjun - III) Tassar
4. Attacus ricini - d) Castor - IV) Mulberry

[Ans. (3)]

4. Select the correct one.

a) 1 – b – IV b) 2 – a – I
c) 3 - c - III d) 4 - d – II **[Ans. (c)]**

5. Silk is obtained from ….

a. Laccifer lacca b. Nosema bombycis
c. Attacus ricini d. Attacus mylitta **[Ans. (c)]**

6. Assertion: Nuptial flight is a unique flight taken the queen bee followed by several drones.

Reason : The queen bee produces a chemical substance called pheromone. The drones in that area are attracted to the pheromone and then mating takes place.

a. Assertion and reason is correct but not related
b. Assertion and reason is incorrect but related
c. Assertion and reason is correct but related
d. Assertion and reason is incorrect but not related

[Ans. (c)]

7. Rearing of honey bee is called

a. Sericulture b. Lac culture
c. Vermiculture d. Apiculture **[Ans. (d)]**

8. Which of the statement regarding Lac insect is TRUE?

a. A microscopic, resinous crawling scale insect
b. Inserts its proboscis into plant tissue suck juices and grows
c. Secretes lac from the hind end of body.
d. The male lac insect is responsible for large scale production of lac.

[Ans. (b, c)]

9. Aquaponics is a technique which is

a. A combination of aquaculture and fish culture
b. A combination of aquaculture and hydroponics
c. A combination of vermiculture and hydroponics
d. A combination of aquaculture and prawn culture. **[Ans. (b)]**

10. Prawn belongs to the class

a. crustacea b. Annelida
c. Coelenterata d. Echinodermata **[Ans. (a)]**

11. Pearl oyster belongs to the Class

a. Gastropoda b. Cephalopoda
c. Scaphapoda d. Pelecypoda **[Ans. (d)]**

12. Inland fisheries are

a. deep sea fishing
b. capturing fishes from sea coast
c. Raising and capturing fishes in fresh water
d. oil extraction from fish **[Ans. (c)]**

13. Induced breeding technique is used in

a. Marine fishery b. Capture fishery
c. Culture fishery d. Inland fishery **[Ans. (d)]**

14. Isinglass is used in

a. Preparation
b. Clearing of wines
c. Distillation of wines
d. Preservation of wines **[Ans. (b)]**

15. Assertion : The best quality of pearl is known as lingha pearl and obtained from marine oysters.

16. Reason : Nacre is secreted continuously by the epithelial layer of the mantle and deposited around the foreign particle

a. Assertion is true, Reason is false
b. Assertion and Reason are false
c. Assertion is false But Reason is true
d. Assertion and Reason are true **[Ans. (d)]**

17. Choose the correctly matched pair

1. Egg layers – Brahma
2. Broiler types - Leghorn
3. Dual purpose – White Plymouth rock
4. Ornamental breeds – Silkie **[Ans. (4)]**

ADDITIONAL

18. ___ is a branch of science that deals with economically useful animals.

a) Economic Zoology b) Vermiculture
c) Vermicompost d) Vermitech **[Ans. (a)]**

19. ____is the primary goal of vermiculture.

a) Economic Zoology b) Vermiculture
c) Vermicompost d) Vermitech **[Ans. (c)]**

20. ____is the compost produced by the action of earthworms in association with all other organisms in the compost unit.

a) Endemic b) Exotic species
c) Vermicompost d) Vermibed **[Ans. (c)]**

21. Vermiwash is obtained from the burrows or ____ formed by earthworms.

a) Vermiwash b) Drilospheres
c) Internal parasites d) Vermicompost **[Ans. (b)]**

22. Production of silk from the silk worm, by rearing practices on a commercial scale is called ____.

a) Silk road b) Sericulture
c) Diapause d) Non-diapause **[Ans. (b)]**

23. _____ develops salivary glands, stops feeding and undergoes pupation in silk.

a) Sericulture b) Caterpillar
c) Moulting d) Spinneret **[Ans. (c)]**

24. These larvae are kept in trays inside a rearing house at a temperature of

a) Cocoon b) Voltinism
c) Moriculture d) About 20°C - 25°C **[Ans. (d)]**

25. The process of killing the cocoons is called ___.

a) 45 days b) Post cocoon processing
c) Stifling d) Reeling **[Ans. (c)]**

26. Only about one-half of the silk of each cocoon is reelable, the remainder is used as a silk waste and formed into ____.

a) 45 days b) Charakhas
c) Spun silk d) Raw silk **[Ans. (c)]**

27. Among the fungal diseases of silkworm, white ___ is common.

a) Muscardine b) Apiculture
c) Apis dorsata d) Apis florea **[Ans. (a)]**

28. Which of the following is a European bee?

a) Apis indica b) Apis mellifera
c) Apis adamsoni d) Apis florea **[Ans. (b)]**

29. The queen bee produces a hormonal chemical substance called _____.

a) Royal Jelly b) Nuptial flight
c) Pheromone d) Workers **[Ans. (c)]**

30. The ____is the functional male member of the colony.

a) Royal Jelly b) Worker Cell
c) Drone d) King of the colony **[Ans. (c)]**

31. The young stages of honey bees accommodate the lower and central cells of the hive called the ____.

a) Swarming b) Brood cells
c) Apisdorsata d) Brood rearing **[Ans. (b)]**

32. ____is the basal part of the hive on which the hive is constructed.

a) Langstroth b) Stand
c) Bottom board d) Brood chamber **[Ans. (b)]**

33. ____ is also a chamber without cover and base.

a) Comb Foundation b) Super
c) Inner cover d) Top cover **[Ans. (b)]**

34. ___are used by bee keepers for protecting their hands while inspecting the hives.

a) Queen Excluder b) Comb foundation
c) Bee gloves d) Bee veil **[Ans. (c)]**

35. ____is a long knife which helps in removing the cap from the combs.

a) Smoker b) Hive Tool
c) Uncapping knife d) Bee brush **[Ans. (c)]**

36. ____ is a device which prevents the escape of queen.

a) Queen introducing cage
b) Feeder
c) Honey Extractor
d) Hive Entrance Guard **[Ans. (d)]**

37. The yellow colour of wax is due to the presence of ___ pigments.

a) Carotenoid b) Lac culture
c) Lac d) Hyper-parasitism **[Ans. (a)]**

38. The process of introducing lac insect on the host plant is called ____.

a) Inoculation b) Harvesting
c) Ari lac d) Mature lac **[Ans. (a)]**

39. The seed lac is sun dried and then melted to produce ____.

a) Stick lac b) Seed lac
c) Shellac d) Lac **[Ans. (c)]**

40. ____ is growing plants in non-soil media and nutrient-laden water.

a) Aquaponics b) Hydroponics
c) 2013 d) Deep water culture **[Ans. (b)]**

41. ____is otherwise known as vertical aquaponics.

a) Media based method
b) Nutrient Film technique
c) Aquavertica
d) Soil **[Ans. (c)]**

42. Culturing of fishes is called fish culture or

a) Pesticides b) Weeds
c) Aquaculture d) Pisciculture **[Ans. (d)]**

43. Culturing of animals in the salinity ranges from 36 - 40% is called ____.

a) Metahaline culture b) Artemia
c) fish breeding d) Breeding ponds **[Ans. (a)]**

44. For proper breeding special types of ponds are prepared called _____.

a) Metahaline culture b) Artemia
c) fish breeding d) Breeding ponds **[Ans. (d)]**

45. Induced breeding is also done by _____.

a) Hypophysation b) Gonadotropin hormone
c) Hapas d) Benchijal **[Ans. (a)]**

46. The fertilized eggs are removed and kept into hatching _____.

a) Hypophysation
b) Gonadotropin hormone
c) Hapas
d) Benchijal **[Ans. (c)]**

47. _____ should be devoid of weeds and predatory fishes.

a) Hatching pits b) Nursery ponds
c) Rearing pond d) Stocking ponds **[Ans. (d)]**

48. _____is derived from fish liver and from the fish body.

a) Histidine b) Fish oil
c) Fish meal d) Isinglass **[Ans. (b)]**

49. ___ is commonly seen in rivers, fields and low-saline estuaries.

a) Macro-brachium rosenbergii
b) Moulting
c) Pearl oysters
d) Lingha Pearl **[Ans. (a)]**

50. The breeding between unrelated animals is called _____.

a) Recovery period b) Animal husbandry
c) Inbreeding d) Outbreeding **[Ans. (d)]**

51. The semen from the male is injected to the selected female ___.

a) Out crossing
b) Cross breeding
c) Artificial insemination
d) Interspecific hybridization **[Ans. (d)]**

52. _____ is another method of propagation of animals with desirable traits.

a) Multiple ovulation embryo transfer technology
b) Dairying
c) Dairy breeds
d) Draught purpose breeds **[Ans. (a)]**

53. _____ serves as a complete food for infants.

a) Dual Purpose breeds b) Milk
c) Meat d) Manure **[Ans. (b)]**

54. ___is essential for the purpose of meat, eggs and feather production.

a) Poultry farming b) 100 chicken breeds
c) Leghorn d) Chittagong **[Ans. (a)]**

55. ___are reared as pets in addition to their use for egg production and meat.

a) White Plymouth rock b) Brahma
c) Aseel d) Ornamental chicken **[Ans. (d)]**

56. ____can be used as manure in fields.

a) Silkie b) Brooding
c) Droppings of poultry d) Duck **[Ans. (c)]**

57. Whose characteristics show the presence of specific environmental conditions?

a) Biological indicator b) Endemism
c) Drilosphere d) Brood **[Ans. (a)]**

58. ____ is a family of birds produced at one hatching or birth.

a) Biological indicator b) Endemism
c) Drilosphere d) Brood **[Ans. (d)]**

NOTES