Topic -Bacteria

1. Which of this bacteria is resistant to penicillin as it lacks a cell wall?

(a) Spirochetes

(b) Cyanobacteria

(c) Mycoplasmas

(d) Bdellovibrios

Answer: (c)

2. What is a cluster of polar flagella called?

(a) Petritrichous

(b) Monotrichous

(c) Amphitrichous

(d) Lophotrichous

Answer: (d)

3. Which of these is a cocci occurring in single or pairs?

(a) Diplococci

(b) Streptococci

(c) Tetracocci

(d) None of the above

Answer: (a)

4. Flagella in bacteria enable them to

(a) reproduce

(b) locomote

(c) Thrive in nutrient agar

(d) Adhere to tissue surfaces

Answer: (b)

5. This about cell wall of gram-positive bacteria is true

(a) cell wall comprises of many layers

(b) the cell wall is thicker than the associated gram-negative bacteria

(c) Cell wall comprises of teichoic acids

(d) All of the above

Answer: (d)

6. What is Chemotaxis?

(a) Swimming towards a bacteria

(b) Swimming away of a bacteria

(c) In the presence of a chemical compound, swimming towards or away of a bacteria

(d) None of these

Answer: (c)

7. Which of these is exposed on the outer surface of a gram-negative bacterium?

(a) Braun lipoprotein

(b) O-antigen of lipopolysaccharide (LPS)

(c) Polysaccharide portion of lipoteichoic acid (LTA)

(d) Electron transport system components

Answer: (b)

8. The covalent bond which links the cell walls of gram-positive bacteria containing two modified sugars – N – acetylmuramic acid (NAM) and N-acetyl glucosamine (NAG) is

(a) glycosidic bond

(b) 1,4-glycosidic bond

(c) 1,6-glycosidic bond

(d) glycosidic bond

Answer: (b)

9. Which one of these has a Chinese letter arrangement?

(a) *Clostridium tetani*

(b) *Mycobacterium tuberculosis*

(c) *Bacillus anthracis*

(d) *Corynebacterium diphtheriae*

Answer: (d)

10. This is analogous to mesosomes of bacteria

(a) Golgi apparatus of eukaryotes

(b) Lysosomes of eukaryotes

(c) Mitochondria of eukaryotes

(d) None of the above

Answer: (c)

Topic -Virus

1. A virus is made up of _____.

(a) Protein coat and nucleic acid

(b) Protein coat and mitochondria

(c) Nucleic acid and cell membrane

(d) Nucleic acid, cell wall and cell membrane

Sol: (a) Protein coat and nucleic acid.

2. The protein coat of viruses that enclose the genetic material is called _____.

(a) Virion

(b) Capsid

(c) Peplomers

(d) Capsomers

Sol:(b) Capsid.

3. Which of the following statements are true about a virion?

(a) Lytic phage

(b) Lysogenic phage

(c) The viral capsid

(d) An infectious and fully formed viral particle

Sol: (d) An infectious and fully formed viral particle.

4. Which of the following is the genome of the virus?

(a) DNA

(b) RNA

(c) DNA or RNA

(d) DNA and RNA

Sol:(c) DNA or RNA

5. Which of the following is the largest virus?

(a) Megavirus chilensis

(b) Arbo virus

(c) Herpes virus

(d) Mumps virus

Sol: (a) Megavirus chilensis

6. Which of the following statements are true about the capsomeres?

(a) It is an individual unit of the capsid

(b) It is a viral protein for replication

(c) It is a unit of nucleic acid in viruses

(d) All of the above

Sol: (a) It is an individual unit of the capsid.

7. Which of the following statements are true about the peplomeres?

(a) It is an individual unit of capsids

(b) It is a spike-like projection on the enveloped viruses

(c) It is a projection on the viral membrane

(d) It is a spike-like projection on the capsids

Sol: (b) It is a spike-like projection on the enveloped viruses.

8. An icosahedral capsid consists of_____.

(a) Hexagonal capsomeres

(b) Pentagonal capsomeres

(c) Triangular capsomeres

(d) Both a and b

Sol: (d) Both a and b.

9. Which of the following has a complex symmetry?

(a) T4 phage

(b) Adenovirus

(c) Influenza virus

(d) All of the above

Sol: (a) T4 phage.

10. The viral envelope is made up of _____.

(a) Proteins

(b) Glycoproteins

(c) Lipids and Proteins

(d) All of the above

Sol: (d) All of the above

11. Which of the following is a helical virus?

(a) TMV

(b) T4 phage

(c) Poxvirus

(d) Herpes virus

Sol: (a) TMV .

12. Which of the following statements are true about the viruses?

(a) Free-living

(b) Obligate parasites

(c) Both (a) and (b)

(d) None of the above

Sol:(b) Obligate parasites.

13. A fully formed infectious viral particle is called _____.

(a) Virion

(b) Viriod

(c) Capsid

(d) Virusoid

Sol: (a) Virion.

14. The genetic constituent of viruses is _____.

(a) RNA

(b) DNA

(c) ss DNA

(d) DNA or RNA

Sol:(d) DNA or RNA

15. The viral genome is enveloped in a protein coat known as

(a) Capsid

(b) Outer envelope

(c) Capsomere

(d) Nucleic

Sol: (a) Capsid.

16. Which of the following statements are true about the tobacco mosaic virus (TMV)?

(a) RNA virus

(b) DNA virus

(c) Bacteriophage(d) ss DNA or ds DNA

Sol:(a) RNA virus.

17. The shape of the TMV is _____.

(a) Rod-shaped

(b) Oval shaped

(c) Cuboidal shaped

(d) Spherical shaped

Sol:(a) Rod-shaped.

18. Viruses that attack bacteria are called_____.

(a) Virophage

(b) Lysophage

(c) Bacteriophage

(d) None of the above

Sol:(c) Bacteriophage.

19. The T2 phage is called_____.

(a) ss DNA phage

(b) ss RNA phage

(c) ds DNA phage

(d) ds RNA phage

Sol: (c) ds DNA phage.

20. Bacteriophages that induce bacterial cell lysis are called_____.

(a) Viroids

(b) Lysogenic phages

(c) Virulent phages

(d) Temperate phages

Sol:(c) Virulent phages.

21. Which of the following virus has the smallest genome?

(a)Rabies virus

(b) Circovirus

(c) Herpes virus

(d) Mimi virus

Sol:(b) Circovirus.

22. Infectious RNA particles without the protein coat are called_____.

(a) Prion

(b) Virion

(c) Viroid

(d) Virusoid

Sol:(c) Viroid.

23. The spike-like projections on the viral capsid are known as

(a) Viriod

(b) Proteomes

(c) Peplomers

(d) capsomeres

Sol:(c) Peplomers.

24. Viral genome inserted to the bacterial DNA is termed as_____.

(a) Lysogeny

(b) Prophage

(c) Lytic cycle

(d) Virulent phage

Sol:(b) Prophage.

25. Which of the following are the main functions of the capsid?

(a) Determines the antigenic specificity of the virus

(b) Protects genetic material from nuclease attack

(c) Both A and B

(d) None of these

Sol:(c) Both A and B.

Topic -Alage

1. Which one of the following is a colonial alga?

(a) *Ulothrix*

(b) *Spirogyra*

(c) *Volvox*

(d) *Chlorella*

Answer: (c)

2. Which of the following shows zygotic meiosis?

(a) *Chlamydomonas*

(b) *Marchantia*

(c) *Funaria*

(d) *Fucus*

Answer: (a)

3. Find the incorrect statement

(a) Agar-agar is produced from *Gracilaria*

(b) *Chlorella* is used in space food

(c) Mannitol is a food reserve of Rhodophyceae

(d) Algin is produced by algae

Answer: (c)

4. Which of the following has non-flagellated isogamous gametes?

(a) *Spirogyra*

(b) *Chlamydomonas*

(c) *Volvox*

(d) *Fucus*

Answer: (a)

5. Mannitol is a reserved food found in

(a) *Gracillaria*

(b) *Porphyra*

(c) *Chara*

(d) *Fucus*

Answer: (d)

6. Which of the following contains chlorophyll a, b, phycoerythrin and phycocyanin?

(a) Chlorophyta

(b) Phaeophyta

(c) Rhodophyta

(d) Bacillariophyta

Answer: (c)

7. Which of the following is rich in protein?

(a) *Ulothrix*

(b) *Spirogyra*

(c) *Nostoc*

(d) *Chlorella*

Answer: (d)

8. *Ulothrix* produces

(a) isogametes

(b) heterogametes

(c) anisogametes

(d) basidiospores

Answer: (a)

9. What is the mode of sexual reproduction in Chlorophyceae?

(a) oogamous

(b) anisogamous

(c) isogamous

(d) all of the above

Answer: (d)

10. What is the shape of chloroplast in *Chlamydomonas*?

(a) cup-shaped

(b) spiral

(c) stellate

(d) collar-shaped

Answer: (a)

Topic- Fungi

1. This fungi division includes 'Club fungi'

(a) Zygomycota

(b) Deuteromycota

(c) Basidiomycota

(d) Ascomycota

Answer: (c)

2. This group is used to represent pathological fungi

(a) Penicillium

(b) Truffles, mushrooms and morels

(c) Smuts, rusts and moulds

(d) All of the above

Answer: (c)

3. The fungi which derive their food directly from dead organic matter are known as

(a) Predators

(b) Decomposers

(c) Mutualists

(d) Parasitic fungi

Answer: (b)

4. What is the name of the special hyphal tips through which parasitic fungi absorb nutrients directly from the cytoplasm of the living host?

(a) Haustoria

(b) Mildew

(c) Constricting ring

(d) All of the above

Answer: (a)

5. Which of these entities is an indicator of the SO_2 pollution of air?

(a) Puffballs

(b) Mushrooms

(c) Mosses

(d) Lichens

Answer: (d)

6. The fungal disease – the black rust of wheat is caused by

(a) *Melampsora lini*

(b) *Claviceps purpurea*

(c) *Puccinia graminis tritici*

(d) *Albugo candida*

Answer: (c)

7. What does 'Perfect stage' of a fungus indicate?

(a) indicates that it can reproduce asexually

(b) indicates that it is perfectly healthy

(c) indicates that it is able to form perfect sexual spores

(d) All of the above

Answer: (c)

8. Death angel/death cap (amanita) and Jack O Lantern mushroom are all examples of

(a) Poisonous mushrooms

(b) Edible mushrooms

(c) None of the above

(d) Both (a) and (b)

Answer: (a)

9. Covered smut of Sorghum is caused by

(a) *Sphacelotheca sorghi*

(b) *Sphacelotheca cruenta*

(c) *Sphacelotheca reiliana*

(d) *Tolyposporium ehrenbergii*

Answer: (a)

10. Oyster mushroom is an example of predator fungi that attacks

(a) Tapeworms

(b) Pinworms

(c) Platyhelminthes

(d) Roundworms

Answer: (d)

Topic- Bryophyta

1. Which among the following is also known as bog moss?

(a) *Riccia*

(b) *Sphagnum*

(c) *Marchantia*

(d) *Funaria*

2. The thalloid plant body is found in

(a) *Marchantia*

(b) *Sphagnum*

(c) *Funaria*

(d) *Salvinia*

3. In some of the liverworts, spore dispersal is aided by

(a) elaters

(b) peristome teeth

(c) indusium

(d) calyptra

4. Peat moss is used for transporting plants to distant places because

(a) it is hygroscopic

(b) it reduces transpiration

(c) it is easily available

(d) it serves as a disinfectant

5. Find the true statement about bryophytes

(a) they have chloroplasts

(b) they have archegonia

(c) they are thalloid

(d) all of the above

6. In mosses, meiosis takes place during

(a) gamete formation

(b) antheridia and archegonia formation

(c) spore germination

(d) spore formation

7. A characteristic feature of bryophytes is

(a) a dominant and parasitic sporophyte

(b) a dominant and spore-producing gametophyte

(c) a small sporophyte phase, which is dependent on the gametophyte

(d) sporophytes stay for a longer duration

8. The antherozoids of *Funaria* are

(a) uniflagellate

(b) biflagellate

(c) multiflagellate

(d) do not have flagella

9. All the plants like fern and mosses, which produce spores are grouped under

(a) bryophytes

(b) cryptogams

(c) thallophytes

(d) sporophytes

10. Independent male and female gametophytes are present in

(a) *Pinus*

(b) mustard

(c) castor

(d) *Sphagnum*

Topic -Pteridophyta

1. In which of the following groups would you place a plant that produces spores, lacks seeds and has vascular tissue?

(a) Bryophyte

(b) Algae

(c) Pteridophyte

(d) Gymnosperm

Answer: (c)

2. In Pteridophytes, the dominant generation is

(a) gametophytic

(b) haploid

(c) diploid

(d) triploid

Answer: (c)

3. Reduction division in pteridophytes occurs in

(a) Prothallus is formed

(b) Gametes are formed

(c) spores are formed

(d) sex organs are formed

Answer: (c)

4. Prothallus represents

(a) sporophytic phase in a fern

(b) gametophytic phase in a fern

(c) sporophytic phase in a gymnosperm

(d) gametophytic phase in a gymnosperm

Answer: (b)

5. Pteridophytes and Bryophytes differ in having

(a) Spermatozoids

(b) Archegonia

(c) Separate gametophytes

(d) conducting system

Answer: (d)

6. Which of the following is deemed to be vital in the development of seed habit?

(a) Heterospory

(b) Dependant sporophyte

(c) Free-living gametophyte

(d) Haplontic life cycle

Answer: (a)

7. Sporophytic and gametophytic phases are independent in

(a) Bryophytes

(b) Pteridophytes

(c) Phaeophytes

(d) Gymnosperms

Answer: (b)

8. 'Club moss' belongs to

(a) Fungi

(b) Algae

(c) Bryophyta

(d) Pteridophyta

Answer: (d)

9. Phloem is without _____ in pteridophytes

(a) Bast fibres

(b) Companion cells

(c) Phloem parenchyma

(d) sieve cells

Answer: (b)

10. This group does not have seeds but has vascular tissues and produces spores

(a) Pteridophyta

(b) Bryophyta

(c) Angiosperms

(d) Gymnosperms

Answer: (a)

Topic -Gymnosperms

1. 'Saccus' term is used for

(a) exine of pollen grains of Pinus

(b) intine of pollen grains of Pinus

(c) Wings of pollen grains of Pinus

(d) Wings of seeds of Pinus

Answer: (c)

2. Flowers and cones are similar because

(a) both assist seed dispersal

(b) both are responsible for attracting insects to pollinate

(c) both are shiny and bright

(d) both are reproductive structures

Answer: (d)

3. An autotrophic, prokaryotic and nitrogen-fixing symbiont is present in

(a) Cicer

(b) Cycas

(c) Sequoia

(d) Pinus

Answer: (b)

4. Pick the pair that is incorrectly matched

(a) Cycas – coralloid roots

(b) Abies – wood tar, wood gas

(c) Pinus – Mycorrhizal roots

(d) Sequoia – Redwood tree

Answer: (b)

5. This serves as a connecting link between the angiosperms and gymnosperms

(a) Gnetales

(b) Coniferales

(c) Ginkgoales

(d) Cycadales

Answer: (a)

6. Though Cycas has an embryo with two cotyledons, it is not grouped under dicotyledonous plants as

(a) ovules are naked

(b) possesses compound leaves

(c) has megasporophyll

(d) resembles a palm tree

Answer: (a)

7. In gymnosperms, the ovules typically are

(a) bitegmic and anatropous

(b) bitegmic and orthotropous

(c) unitegmic and orthotropous

(d) unitegmic and anatropous

Answer: (c)

8. Tallest known gymnosperm is

(a) Pinus

(b) Ginkgo

(c) Sequoia

(d) Ephedra

Answer: (c)

9. Inverted omega-shaped organization of vascular bundles is seen in

(a) cycas root

(b) cycas stem

(c) cycas leaflet

(d) cycas rachis

Answer: (d)

10. Phanerogams without the ovaries are

(a) angiosperms

(b) pteridophytes

(c) gymnosperms

(d) all the above

Answer: (c)

Topic –Plant Anatomy

1. The waxy substance associated with the wall of the cork cell is

a. Lignin
b. Hemicellulose

c. Cutin
d. Suberin

2. A tissue that does not contain lignin

a. Sclerenchyma
b. Parenchyma
c. Collenchyma
d. Chlorenchyma

Also Read: Permanent Tissue

3. Lateral roots originate in

a. Cortex
b. Endodermal cells
c. Pericycle
d. Cork cambium

4. Which gives rise to the cork tissue?

a. Periblem
b. Phellogen
c. Phelloderm
d. Periderm

5. Which are the external protective tissues of the plant?

a. Cortex and epidermis
b. Cork and cortex
c. Pericycle and cortex
d. Epidermis and cork

6. Following is the characteristic of collenchyma

a. Elongated cells with thickened corners
b. Isodiametric cells with thickened walls
c. Elongated cells with deposits of cellulose and pectin
d. Isodiametric cells with deposits of cellulose and pectin

7. Casparian strips are found in

a. Epidermis
b. Endodermis
c. Exodermis
d. Pericycle

8. The apical meristem of the root is found in

a. Taproots
b. Radicals
c. Adventitious roots
d. All the roots

9. Bordered pits are found in

a. Vessel wall
b. Sieve cells
c. Sieve tube
d. Companion cells

10. Where in epiphytes are velamen cells located?

a. Below the endodermis
b. Below the epidermis

c. Just outside the cortex
d. Just outside the exodermis

11. Intercalary meristem results in

a. Primary growth
b. Secondary growth
c. Apical growth
d. None

12. The age of the tree can be determined by

a. Measuring its diameter
b. Counting the number of annual rings
c. Counting the number of leaves
d. Finding out the number of branches

13. Which meristem helps in increasing the girth of the plant?

a. Primary meristem
b. Apical meristem
c. Intercalary meristem
d. Lateral meristem

14. Fibres associated with phloem

a. Wood fibres
b. Bast fibres
c. Hard fibres
d. Surface fibres

15. In angiosperms, xylem is made up of

a. Tracheids and fibres
b. Tracheids and vessels
c. Vessels and fibres
d. All of the above

16. Which of the following has a perforated cell wall?

a. Vessel
b. Fibre
c. Tracheid
d. Sclereid

17. How many radial vascular bundles are found in dicot roots?

a. Four
b. Six
c. Two
d. One

18. Bicollateral bundles are found in the stem of

a. Pumpkin
b. Sunflower
c. Dracaena
d. Gram

19. Vascular bundles in dicot stem are

a. Closed, conjoint, endarch
b. Open, conjoint, endarch
c. Closed, conjoint, exarch
d. Open, conjoint, exarch

20. Wound healing in plants is initiated by

a. Apical meristem
b. Lateral meristem
c. Secondary meristem
d. Intercalary meristem

1. Which of these is the most advanced phylogenetically among the dicotyledonous families?

(a) Scrophulariaceae

(b) Acanthaceae

(c) Umbelliferae

(d) Compositae

Answer: (d)

2. The substitute for the newly collected specimen when the original type material is missing in a herbarium is entitled as

(a) Holotype

(b) Neotype

(c) Lectotype

(d) Isotype

Answer: (b)

3. If all the puddles and ponds are destroyed, the entities likely to be destroyed are

(a) Plasmodium

(b) Ascaris

(c) Leishmania

(d) Trypanosoma

Answer: (a)

4. In the five-kingdom system of classification, into which kingdom would you classify nitrogen-fixing organisms and archaea?

(a) Fungi

(b) Plantae

(c) Protista

(d) Monera

Answer: (d)

5. This is considered as a demerit of the 'Engler and Prantl' in the system of classification

(a) Gymnosperms are placed between monocotyledons and dicotyledons

(b) Dicotyledons are placed after monocotyledons

(c) Dicotyledons are placed before monocotyledons

(d) Gymnosperms are placed among Dicotyledons

Answer: (b)

6. The basis of Phenetic classification is

(a) Observable characteristics of existing entities

(b) The ancestral lineage of existing organisms

(c) Dendrograms based on DNA characteristics

(d) Sexual characteristics

Answer: (a)

7. Difference between the natural system of plant classification and artificial system of classification is

(a) Considers only one vegetative character

(b) Considers all the similarities between plants

(c) Considers only one floral character

(d) All of the above

Answer: (b)

8. This system of classification was used by Linnaeus

(a) Phylogenetic system

(b) Natural system

(c) Artificial system

(d) Asexual system

Answer: (c)

9. Pick the right sequence of taxonomic categories

(a) division-class-family-tribe-order-genus-species

(b) division-class-family-order-tribe-genus-species

(c) division-class-order-family-tribe-genus-species

(d) division-order-class-family-genus-tribe-species

Answer: (c)

10. 'New Systematics' term was coined by

(a) Linnaeus

(b) Bentham and Hooker

(c) A.P. de Candolle

(d) Juliane Huxley

Answer: (d)

Topic- Embryology

1. Flowers with both androecium and gynoecium are called

1. Bisexual flowers

2. Anther

3. Stamens

4. Unisexual flowers

Also read: Flower

2. The transfer of pollen from the anther to stigma is called

1. Pollination
2. Fertilization
3. Adoption
4. Diffusion

Also read: Pollination

3. The fusion of female reproductive nucleus with the male reproductive nucleus is known as

1. Adoption
2. Excretion
3. Fertilization
4. Regeneration

4. The two nuclei at the end of the pollen tube are called

1. Tube nucleus and a generative nucleus
2. Sperm and ovum
3. Generative nucleus and stigma
4. Tube nucleus and sperm

5. Generative nucleus divides forming

1. 2 male nuclei
2. 3 male nuclei
3. 2 female nuclei
4. 3 female nuclei

6. Embryo sac is located inside the

1. Stigma
2. Ovule
3. Micropyle
4. Style

Also read: How is an Embryo-sac formed?

7. One nucleus of the pollen tube and secondary nucleus of the ovum grow into

1. Stigma
2. Endosperm
3. Anther
4. Stamen

8. The stalk of Datura flower at its base is known as

1. Pedicel
2. Corolla
3. Sepals
4. Thalamus

9. The male reproductive parts of a flower, the stamens, are collectively known as

1. Androecium
2. Filament
3. Anther
4. Gynoecium

10. The other name for gynoecium is

1. Pistil
2. Stigma
3. Androecium
4. Style

11. Functional megaspore in a flowering plant develops into

1. Endosperm
2. Ovule
3. Embryo-sac
4. Embryo

12. Which of the following is similar to autogamy, but requires pollinators?

1. Geitonogamy
2. Cleistogamy
3. Apogamy
4. Xenogamy

13. What is the function of the filiform apparatus?

1. Guide the entry of pollen tube
2. Recognize the suitable pollen at the stigma
3. Produce nectar
4. Stimulate division of the generative cell

14. A mass of nutritive material outside the embryo sac is called _____

1. Protoplasm
2. Pericarp
3. Ectoderm
4. Perisperm

15. Which of the following statements is correct?

1. Sporogenous tissue is haploid
2. The hard outer layer of pollen is called intine
3. Tapetum nourishes the developing pollen
4. Microspores are produced by endothecium

16. Which of the following fruit is produced by parthenocarpy?

1. Brinjal
2. Apple
3. Banana
4. Jackfruit

17. The process of formation of seeds without fertilization in flowering plants is known as

1. Budding
2. Apomixis
3. Sporulation
4. Somatic hybridization

18. Functional megaspore in an angiosperm develops into

1. Endosperm
2. Embryo
3. Embryo-sac
4. Ovule

19. Rewards and attractants are required for

1. Entomophily
2. Cleistogamy
3. Anemophily
4. Hydrophily

20. A dioecious flowering plant prevents

1. Geitonogamy and xenogamy
2. Autogamy and xenogamy
3. Autogamy and geitonogamy
4. Cleistogamy and xenogamy

Topic- Apomixis

1. In many laboratories, active research is on to comprehend the genetics of apomixis

(a) Apomixis generates genetically different individuals

(b) Apomixis is the method to produce seeds without fertilization

(c) Hybrid plants are directly formed by apomixis

(d) Transfer of apomictic genes into hybrid varieties that shall prevent hybrid vigour loss over the years

Answer: (d)

2. Apomixis is a form of

(a) Vernalization

(b) Parthenogenesis

(c) Parthenocarpy

(d) None of the above

Answer: (b)

3. Geitonogamy and autogamy both are prevented in which one of these?

(a) Cucumber

(b) Maize

(c) Castor

(d) Papaya

Answer: (d)

4. In plants, apomixis pertains to plant development

(a) from root cuttings

(b) from cuttings of stem

(c) without the gametes having to fuse

(d) fusion of gametes

Answer: (c)

5. The reason why hybrid seeds have to be produced every year is

(a) hybrid seed industry tends to increase the cost of seeds

(b) hybrid plants turn sterile in coming years

(c) show more heterosis in coming years

(d) hybrid vigour is not maintained in more than one generation as segregation of genes is initiated in the second generation

Answer: (d)

6. In adventive embryony, a type of apomixis, the embryo develops directly from the

(a) Zygote

(b) accessory embryo sacs in the ovule

(c) antipodals or synergids in an embryo sac

(d) integuments or nucleus

Answer: (d)

7. Megasporium is equivalent to

(a) ovule

(b) embryo sac

(c) fruit

(d) Nucleus

Answer: (a)

8. One of these statements about apomixis is incorrect

(a) formation of seeds without fertilization

(b) Meiotic division and fertilization of gametes takes place to form a zygote

(c) Seeds are genetically similar

(d) None of these

Answer: (b)

9. This about apomixis is true:

(a) There is no fertilization involved in both apomixis and parthenocarpy

(b) Apomixis produces genetically identical mother cells

(c) Apomixis is observed in angiosperms and gymnosperms

(d) All of the above

Answer: (d)

10. The difference between perisperm and endosperm is that perisperm:

(a) has reserve food

(b) forms by fusion of the secondary nucleus with several sperms

(c) is a diploid tissue

(d) is a haploid tissue

Answer: (c)

Topic- Ecology

1. The natural place of an organism or community is known as

1. Niche
2. Biome
3. Habitat
4. Habit

2. Which is the renewable exhaustible natural energy resource?

1. Coal
2. Petroleum
3. Kerosene
4. Biomass

Also read: Coal and Petroleum

3. According to Shelford's Law of Tolerance, the organisms wide environmental factor tolerance limit show

1. Narrow distribution with low population size
2. Wide distribution with high population size
3. Narrow distribution with high population size
4. Wide distribution with low population size

4. Plants growing under direct sunlight are known as

1. Heliophytes
2. Sciophytes
3. Psamophytes
4. Dicots

5. Plants growing under shade are known as

1. Psamophytes
2. Sciophytes
3. Heliophytes
4. Monocots

6. An orchid living on a tree exhibits

1. Predator
2. Mutualism
3. Commensalism
4. Parasitism

Also read: Parasitism

7. Which statement is correct with respect to the food chain?

1. Every component of food chain forms trophic level
2. Inter-relation between different food chains is known as a food web
3. All the chains formed by nutritional relations is used to understand energy flow.
4. All of the above

8. The process of vernalization is practised in

1. Cold countries
2. Hot countries
3. Only in sub-tropical countries
4. Only in tropical countries

Also read: Photoperiodism and Vernalization

9. Which of the following requires maximum energy?

1. Secondary consumer
2. Decomposer
3. Primary consumer
4. Primary producer

10. The bottom area where production is less than respiration in a pond ecosystem is termed as

1. Profundal zone
2. Tidal zone
3. Benthic zone
4. Limnetic zone

Also read: Aquatic Ecosystem

11. Which is not the characteristic of 'r' selected species?

1. Reproduce quickly
2. Parental care
3. A low survival rate of progenies
4. Produce a large number of progenies

12. Which is not the characteristic of a population?

1. Natality
2. Mortality
3. Stratification
4. Sex ratio

Also read: Introduction to Population Growth

13. Lincoln index measures

1. Population mortality rate
2. Population natality rate
3. Population size
4. Population density

14. Allelopathy refers to

1. Inhibition of growth of one species by another by the production of toxins
2. Inhibition of sporulation of pathogen by the host
3. Altering the reproductive cycle of one organism by another
4. Inhibition of growth of one species by another by preventing reproduction

15. The ratio between energy flow at different points in a food chain is known as

1. Ecological capacity
2. Ecological efficiency
3. Ecological assimilation
4. Ecological potential

Also read: Energy Flow in an Ecosystem

16. The ability of a population to increase under ideal environmental conditions is called

1. Natality
2. Carrying capacity
3. Biotic potential
4. Absolute natality

17. In an ecosystem, the energy flow is always

1. Always unidirectional
2. Always bidirectional
3. In any direction
4. Always down directional

Also read: Ecosystem

18. In thermal stratification, the middle region which shows vertical temperature change is called

1. Mesolimnion
2. Epilimnion
3. Metalimnion
4. Hypolimnion

19. Select a non-denitrifying bacteria

1. *Pseudomonas aeruginosa*
2. *Thiobacillus*
3. *Thiobacillus denitrificans*
4. *Bacillus ramosus*

20. Which one is a 'K' selected species?

1. Aspergillus
2. Human
3. Taraxacum
4. Grass

21. All species of Lemur are endemic to which area?

1. Madagascar
2. Seychelles Island
3. Galapagos Island
4. New Caledonia

22. The upper part of an aquatic ecosystem contains

1. Nekton
2. Plankton
3. Benthos
4. both (1) and (2)

23. What type of food chain is it?

dead animals → blowfly maggot → maggots → frog → snake

1. Detrital food chain
2. Decomposer food chain
3. Predator food chain
4. Grazing food chain

24. Identify the mismatched pair

1. Tundra – Permafrost
2. Savanna – Acacia trees
3. Prairie – Epiphytes
4. Coniferous forest – Evergreen trees

25. "The pyramid of energy is always upright" states that

1. The energy conversion efficiency of herbivores is better than carnivores
2. The energy conversion efficiency of carnivores is better than herbivores
3. Producers have the lowest energy conversion efficiency
4. Energy conversion efficiency is the same in all trophic levels

26. The population of birds declined in an area where DDT was extensively used. Why?

1. The birds stopped laying eggs
2. The eggs laid by the birds did not hatch
3. The snakes ate the eggs
4. The DDT spray killed all the birds

27. Which of the following lake zones has phytoplanktons in abundance?

1. Littoral zone
2. Benthic zone
3. Limnetic zone
4. Profundal zone

28. Plant species with a wide range of genetic distribution evolve into a local population known as

1. Ecotype
2. Population
3. Ecosystem
4. Biome

29. dB is the abbreviation used for the quantitative expression of

1. Density of bacteria in a medium
2. A Particular Pollutant
3. Dominant Bacillus in a culture
4. A pesticide

30. The eggshell of birds becomes thin by the pollution from pesticides due to the interference in the activity of

1. Calmodulin
2. MgATPase
3. CaATPase

4. Calcium

Topic- Biodiversity

1. How many biogeographic does India have?

1. 5
2. 6
3. 8
4. 10

2. Lime is generally added to _____ soil

1. Salty
2. Dry
3. Alkaline
4. Acidic

3. _____ has the maximum genetic diversity in India

1. Potato
2. Tea
3. Mango
4. Teak

4. _____ is one of the most prevalent hotspots of biodiversity in India

1. Himalayas
2. Western Ghats
3. Ganges
4. None of the above

5. Galápagos finches are a good example of _____

1. Extinction
2. Heterochromia
3. Island gigantism
4. Adaptive radiation

6. _____ is one of the least porous soils

1. Peat Soil
2. Loam
3. Clayey soil
4. None of the above

7. _____ is a non-renewable resource

1. Crude oil
2. Uranium
3. Hot spring
4. Silica

8. _____ is an example of an ex-situ conservation.

1. Sacred groves
2. Wildlife sanctuary
3. Seed bank
4. National park

9. _____ is not generally seen in biodiversity hotspots.

1. Endemism
2. Species richness
3. Loss of diversity
4. Lesser interspecific competition.

10. _____ occurs when the death of the last individual in a species occurs.

1. Adaptation
2. Phylogenic diversity
3. Speciation
4. Extinction

11. _____ is defined as an ecological state of a species being unique to a specific geographic location.

1. Exotic species
2. Endemic species
3. Ecosystem
4. None of the above

12._____ is the forest cover to be maintained as per the National Forest Policy (1988)

1. 67% for hills & 33% for plains
2. 37% for hills & 11% for plains
3. 17% for hills & 23% for plains
4. None of the above

13. _____ is defined as the number of species represented in a specific region, landscape or an ecological community.

1. Coevolution
2. Commensalism
3. Species richness
4. Population density

14. Global warming can significantly be controlled by _____

1. Increasing solid waste
2. Reducing water wastage
3. Burning human-generated waste
4. Reducing fossil fuel consumption

15. _____ is the basic unit of classification and a taxonomic rank

1. Species
2. Genus
3. Class
4. Order

16. Which of the following animals is now extinct?

1. Tasmanian tiger
2. Tasmanian devil
3. Pademelon
4. Quoll

Topic- Enzymes

1. The nature of an enzyme is

(a) Lipid

(b) Vitamin

(c) Carbohydrate

(d) Protein

Answer: (d)

2. In alcoholism, this enzyme is elevated

(a) acid phosphatase

(b) hepatitis

(c) serum glutamate pyruvate transaminase

(d) glutamyl transpeptidase

Answer: (d)

3. With regards to enzyme action, this statement is incorrect

(a) Malonate is a competitive inhibitor of succinic dehydrogenase

(b) the substrate binds with the enzyme at its active site

(c) the non-competitve inhibitor binds the enzyme at a site distinct from that binding the substrate

(d) addition of a lot of succinates does not reverse the inhibition of succinic dehydrogenase by malonate

Answer: (d)

4. What is the count of genes that determine the synthesis of one enzyme?

(a) One

(b) Four

(c) Eight

(d) Sixteen

Answer: (a)

5. This enzyme was first isolated and purified in the form of crystals

(a) Urease

(b) pepsin

(c) Amylase

(d) Ribonuclease

Answer: (a)

6. Macromolecule chitin is

(a) a simple polysaccharide

(b) sulphur containing polysaccharide

(c) phosphorous containing polysaccharide

(d) nitrogen containing polysaccharide

Answer: (d)

7. Enzyme-driven metabolic pathways can be made more efficient by

(a) grouping enzymes into multienzyme free-floating complexes

(b) concentrating enzymes with specific cellular compartments

(c) fixing enzymes into membranes so they are adjacent to each other

(d) all of these

Answer: (d)

8. Tryptophan synthetase of *E.coli*, a typical bifunctional oligomeric enzyme consists of

(a) a protein A and one subunit A

(b) a protein designated A

(c) two proteins designated A and B

(d) a protein designated B

Answer: (c)

9. This statement about enzymes is true

(a) enzymes accelerate reactions by lowering the activation energy

(b) enzymes are proteins whose three-dimensional form is key to their function

(c) enzymes do not alter the overall change in free energy for a reaction

(d) all of these

Answer: (d)

10. The enzyme COX-1 is vital for human health in this way:

(a) it is a chemical derivative of aspirin

(b) catalyzes the hormone-production which maintains the stomach lining

(c) critical for the biosynthesis of DNA

(d) helps in the transportation of carbon dioxide in the blood

Answer: (b)

Topic – Photosynthesis

1. Photosynthesis occurs in

a. Chloroplast
b. Golgi body
c. Endoplasmic reticulum
d. Nucleus

2. The optimum temperature for photosynthesis is

a. 25-35℃
b. 10-15℃
c. 35-40℃
d. 20-25℃

3. Photorespiration occurs in

a. Four cell organelles
b. Two cell organelles
c. One cell organelle
d. Three cell organelle

4. Reduction of NADP occurs in

a. Oxidative photophosphorylation
b. Cyclic photophosphorylation
c. Non-cyclic photophosphorylation
d. None

5. Kranz anatomy is found in the leaves of

a. Wheat
b. Mustard
c. Potato
d. Sugarcane

6. Peroxisomes are involved in which type of reactions

a. Calvin cycle
b. Glyoxylate cycle
c. Glycolate cycle
d. Bacterial photosynthesis

7. Photorespiration involves oxidation of

a. PGA
b. RuBP
c. Chlorophyll a
d. Both a and b

8. C3 and C4 plants differ with respect to

a. Number of ATP molecules consumed
b. First product
c. The substrate which accepts carbon dioxide
d. All

Also Read: Photorespiration

9. In Calvin cycle, 1 molecule of glucose is formed from

a. $6CO_2$ + 30ATP + 12NADPH
b. $6CO_2$ + 12ATP
c. $6CO_2$ + 18ATP + 12NADPH
d. $6CO_2$ + 18ATP + 30NADPH

10. Where does the light reaction takes place?

a. Grana
b. Stroma
c. Cytoplasm

d. Endoplasmic reticulum

11. Electrons from the excited chlorophyll molecules of PS-II are first accepted by

a. Pheophytin
b. Ferredoxin
c. Cytochrome f
d. Cytochrome b

12. Non-cyclic photophosphorylation results in the production of

a. NADH
b. NADPH
c. ATP
d. ATP and NADPH

13. DCMU inhibits

a. PS-I
b. PS-II
c. Oxidative phosphorylation
d. It destroys chloroplast

14. Maximum photosynthesis occurs in

a. Blue light
b. Red light
c. White light
d. Green light

15. The first acceptor of CO_2 in C4 plants is

a. Aspartic acid
b. Malic acid
c. Oxaloacetic acid
d. Phosphoenolpyruvate

16. The first product of C4 pathway is

a. PGA
b. DHAP
c. Oxaloacetate
d. Phosphoenolpyruvate

17. The two pigment system theory of photosynthesis was proposed by

a. Aron
b. Blackman
c. Hill
d. Emerson

18. H_2 donor during photosynthesis is

a. ATP
b. NADP
c. NADPH
d. NADH

19. The minerals involved in splitting reaction during photosynthesis is

a. Potassium and manganese
b. Magnesium and chlorine
c. Potassium and chlorine
d. Manganese and chlorine

20. The water-soluble photosynthetic pigment is

a. Chlorophyll a
b. Xanthophyll
c. Anthocyanin
d. Chlorophyll b

Topic- Respiration

1. **Alpha-ketoglutarate dehydrogenase results in**
   a. Oxidation and Decarboxylation
   b. Reduction
   c. Oxidation
   d. None of the above
2. **_____ is a product of aerobic respiration**
   a. Malic acid
   b. Pyruvate
   c. Ethylene
   d. Lactose
3. **Energy gained during aerobic respiration is _____ times more than anaerobic respiration.**
   a. 8
   b. 12
   c. 19
   d. 32
4. **Glycolysis is also known as _____**
   a. EMP pathway
   b. TCA pathway
   c. carbon sequestration
   d. None of the above
5. **On oxidation of 1 molecule of glucose, _____ ATP is produced through aerobic respiration**
   a. 10
   b. 25
   c. 30
   d. 38
6. **Protons accumulate on the _____ in mitochondria.**
   a. Inner membrane
   b. Intermembrane space
   c. Outer membrane
   d. None of the above
7. **Oxidative phosphorylation usually refers to_____**
   a. Anaerobic production of ATP
   b. Citric acid cycle production of ATP
   c. Alcoholic fermentation
   d. None of the above
8. **The process of cell respiration is carried out by _____**
   a. Mitochondria
   b. Chloroplast
   c. Nucleus
   d. None of the above
9. **An important product of the Krebs cycle is**
   a. Water
   b. Methane
   c. ATP
   d. None of the above
10. **Acetyl CoA forms a 6-C compound after combining with**
    a. Oxygen
    b. Pyruvic acid
    c. Citric acid
    d. Oxaloacetic acid

Topi- Nitrogen Metabolisim

1. Which of the following statements is correct?

a. Atmosphere is the major reservoir for plants
b. Nitrogen is the most abundant nutrient for plants
c. Nitrogen cycle is a sedimentary cycle
d. All

2. Nitrogen is absorbed by the plants in the form of

a. Ammonium
b. Nitrites
c. Nitrates
d. All

3. Nitrogen fixation is the conversion of

a. N_2 to N
b. N_2 to NH_3
c. N_2 to NO_3^-
d. N_2 to urea

4. Important enzymes involved in nitrogen fixation are

a. Nitrogenase and hydrogenase
b. Nitrogenase and hexokinase
c. Nitrogenase and peptidase
d. Nitrogenase and hydrolyase

5. Symbiotic nitrogen-fixing cyanobacteria are not present in

a. *Azolla*
b. *Gnetum*
c. *Anthoceros*
d. *Cycas*

6. How many molecules of ATP are required to fix one molecule of nitrogen?

a. 12
b. 20
c. 6
d. 16

7. Ammonification is the formation of

a. Ammonia from nitrates by decomposers
b. Ammonia from nitrogen
c. Ammonia from amino acids
d. Ammonia from nitrates by nitrogen fixers

8. Conversion of nitrates to nitrogen is called

a. Ammonification
b. Nitrification
c. Nitrogen fixation
d. Denitrification

9. Conversion of nitrites to nitrates is called

a. *Nitrosococcus*
b. *Clostridium*
c. *Nitrobacter*
d. *Nitrosomonas*

10. Conversion of ammonia to nitrite and then to nitrates is called

a. Ammonification
b. Denitrification
c. Assimilation
d. Nitrification

Topic – Lipid Metabolasium

1. This molecule acts as molecular chaperones to assist the folding of proteins

(a) Vitamins

(b) Carbohydrates

(c) Amides

(d) Lipids

Answer: (d)

2. Which of these is not a lipid?

(a) Fats

(b) Oils

(c) Proteins

(d) Waxes

Answer: (c)

3. The abundantly distributed enzyme in germinating seeds and adipocytes is

(a) Lipase

(b) Proteases

(c) Cellulase

(d) Nuclease

Answer: (a)

4. Beta-oxidation of fatty acids occurs in

(a) Peroxisome

(b) Peroxisome and Mitochondria

(c) Mitochondria

(d) Peroxisome, Mitochindria and ER

Answer: (C)

5. An example of _____ is Carnauba wax

(a) Soft wax

(b) Liquid wax

(c) Hard wax

(d) Archaebacterial wax

Answer: (c)

6. In fats, the number of OH groups can be expressed as

(a) Reichert-Meissil number

(b) Polenske number

(c) Iodine number

(d) Acetyl number

Answer: (d)

7. Rancidity of lipids of lipid-rich foodstuff is because of

(a) Reduction of fatty acids

(b) Hydrogenation of unsaturated fatty acids

(c) Dehydrogenation of saturated fatty acids

(d) Oxidation of fatty acids

Answer: (d)

8. This is an example of derived lipids

(a) Terpenes

(b) Steroids

(c) Carotenoids

(d) All of the above

Answer: (d)

9. The degree of unsaturation of lipids can be measured as

(a) Iodine number

(b) Saponification number

(c) Reichert Meissel number

(d) Polenske number

Answer: (a)

10. The specific gravity of lipid is

(a) 1.5

(b) 1.0

(c) 0.8

(d) 0.2

Answer: (c)

Topic- Cell Biology

1. The term cell was given by

1. Robert Hooke
2. Tatum
3. Schwann
4. De Bary

2. The cell is not applied for

1. Algae
2. Bacteria
3. Virus
4. Fungi

3. The membrane around the vacuole is known as

1. Tonoplast
2. Elaioplast
3. Cytoplast
4. Amyloplast

4. Microfilaments are composed of a protein called

1. Tubulin
2. Actin
3. Myosin
4. Chitin

5. A plant cell wall is mainly composed of

1. Protein
2. Cellulose
3. Lipid
4. Starch

6. Glycolipids in the plasma membrane are located at

1. Inner leaflet of the plasma membrane
2. The outer leaflet of the plasma membrane
3. Evenly distributed in the inner and outer leaflets
4. It varies according to cell types

7. Lysosomes are known as “suicidal bags” because

1. Parasitic activity
2. Presence of food vacuole
3. Hydrolytic activity
4. Catalytic activity

8. The properties of integral membrane proteins can be studied by

1. Atomic force microscopy
2. Cryo-sectioning and electron microscopy
3. Freeze-fracture technique and electron microscopy
4. All of the above

9. The fluidity of the plasma membrane increases with

1. Increase in unsaturated fatty acids in the membrane

2. Increase in saturated fatty acids in the membrane
3. Increase in glycolipid content in the membrane
4. Increase in phospholipid content in the membrane

10. Which among the following defines GPI anchored proteins?

1. Integral proteins of the plasma membrane
2. Peripheral proteins of the plasma membrane
3. Proteins that bind to ion-gated channels in the plasma membrane
4. Proteins which randomly bind to lipids of the plasma membrane

11. The resting potential membrane is determined by

1. Potassium-ion gradient
2. Sodium-ion gradient
3. Bicarbonate-ion gradient
4. None

12. The oxygen and carbon dioxide crosses the plasma membrane by the process of

1. Active diffusion
2. Facilitated diffusion
3. Passive diffusion
4. Random diffusion

13. A cell without a cell wall is termed as

1. Tonoplast
2. Protoplast
3. Symplast
4. Apoplast

14. Which is not an example of transmembrane transport between different subcellular compartments?

1. Transport from the stroma into thylakoid space
2. Transport from the cytoplasm into the lumen of the endoplasmic reticulum
3. Transport from the endoplasmic reticulum into the Golgi complex
4. Transport from mitochondrial intermembrane space into the mitochondrial matrix

15. Which is correct regarding the peptides in the Ramachandran Plot?

1. The sequence of the peptide can be deduced
2. It is not possible to conclude whether a peptide adopts entirely helix or entirely beta-sheet conformation
3. Peptides that are unstructured will have all the backbone dihedral angles in the disallowed regions
4. The occurrence of a beta-turn conformation in a peptide can be deduced.

16. The function of the centrosome is

1. Formation of spindle fibres
2. Osmoregulation
3. Secretion
4. Protein synthesis

17. Which cell organelle is involved in apoptosis?

1. Lysosome
2. ER
3. Golgi
4. Mitochondria

18. Phosphatidylserine residues in the plasma membrane are located at

1. Inner leaflet of the plasma membrane
2. The outer leaflet of the plasma membrane
3. Evenly distributed in the inner and outer leaflet
4. None

19. Distribution of intrinsic proteins in the plasma membrane is

1. Random
2. Symmetrical
3. Asymmetrical
4. None

20. Select a foodborne toxin

1. Botulinum toxin
2. Tetanus Toxin
3. Diphtheria toxin
4. Cholera Toxin

Topic- Nucleic acids

1. A phosphodiester bond is present in

(a) Nucleic acids in a nucleotide

(b) Monosaccharides in a polysaccharide

(c) Amino acids in a polypeptide

(d) Fatty acids in a diglyceride

2. Uridine present in RNA is

(a) nucleotides

(b) pyrimidine

(c) purine

(d) nucleoside

3. Nucleic acids are a polymer of nucleotide monomeric units. Each nucleotide consists of

(a) base-sugar-OH

(b) sugar-phosphate

(c) base-sugar-phosphate

(d) $(\text{base-sugar-phosphate})_x$

4. A DNA segment contains 100 Adenine and 100 cytosines, how many nucleotides are present in the segment?

(a) 100

(b) 200

(c) 400

(d) 50

5. Nucleoside contains

(a) base-sugar

(b) base-phosphate

(c) base-sugar-phosphate

(d) sugar-phosphate

6. ATP is a

(a) nucleoside

(b) nucleotide

(c) vitamin

(d) nucleic acid

7. Find the correct statement about phosphodiester linkage between adjacent nucleotides in nucleic acids

(a) 3'-phosphate of one nucleotide joins the 3'-hydroxyl of the next nucleotide

(b) 3'-phosphate of one nucleotide joins the 5'-hydroxyl of the next nucleotide

(c) 5'-phosphate of one nucleotide joins the 5'-hydroxyl of the next nucleotide

(d) 5'-phosphate of one nucleotide joins the 3'-hydroxyl of the next nucleotide

8. The sugar molecule present in nucleotide is

(a) triose

(b) tetrose

(c) pentose

(d) hexose

9. Which of the following nucleotide contains only ribose sugar and not deoxyribose?

(a) Thymine – pentose sugar-phosphate

(b) Uracil – pentose sugar-phosphate

(c) Thymine – pentose sugar-phosphate

(d) Cytosine – pentose sugar-phosphate

10. Purine base found in RNA is

(a) Cytosine

(b) Thymine

(c) Guanine

(d) Uracil

Topic- Cell cycle and Cell division

1. who coined the term "Meiosis".

1. Van Burin and Hertwig
2. Boveri and Stuka
3. Walleye and Hofmeister
4. Farmer and Moore

2. Chromatids coiling in the meiotic and mitotic division is

1. Plectonemic in both
2. Paranemic in both
3. Paranemic in mitosis and plectonemic in meiosis
4. Plectonemic in mitosis and paranemic in meiosis

3. When there is an increase in the condensation of chromatin during the process of cell division

1. Heterochromatin increases
2. Euchromatin increases
3. Differentiation of euchromatin & heterochromatin decreases
4. Differentiation of euchromatin & heterochromatin increases

4. The condensation of chromosomes is observed in

1. Prophase 1
2. Anaphase 1
3. Metaphase 1
4. None of the above

5. Nuclear DNA replicates in the _____ phase.

1. G2 phase
2. M phase
3. S phase
4. None of the above

6. _____ is a form of cell division which results in the creation of gametes or sex cells.

1. Mitosis
2. Meiosis
3. Miosis
4. None of the above

7. ____ is the number of DNA in the chromosome at the G2 stage of the cell cycle

1. 1
2. 2
3. 3
4. 0

8. The stage which serves as a connecting link between meiosis 1 and meiosis 2

1. Interphase 2
2. Interphase 1
3. Interkineses
4. None of the above

9. The longest stage in the cell cycle is

1. Interphase
2. Anaphase
3. Metaphase
4. None of the above

10. The _____ state implies the exit of cells from the cell cycle

1. S
2. G1
3. G2
4. G0

11. Synapsis is defined as the pairing of _____

1. Acentric chromosomes
2. Non-homologous chromosomes
3. Any chromosomes
4. Homologous chromosomes

12. Mitosis can be observed in _____

1. Polyploid individual
2. Diploid individual
3. Haploid individual
4. Both (1,) (2) and (3)

13. The spindle apparatus is formed during the _____ phase of mitosis.

1. Telophase
2. Metaphase
3. Prophase
4. Anaphase

14. Cyclin is associated with _____

1. Leptospirosis
2. Glycolysis
3. Cylosis
4. Mitosis

15. If an individual wants to view diakinesis, which of these would be

1. Hair
2. Leaf
3. Onion root
4. Flower bud

16. Chromosome structure can be observed best during ____

1. Anaphase
2. Metaphase
3. Prophase
4. None of the above

Topic –Protein Synthesis

1. This best describes a polysome

(a) active site for synthesis of lipids

(b) active site for synthesis of proteins

(c) active site for synthesis of DNA

(d) all of these

Answer: (b)

2. In protein synthesis, translocation is initiated with the movement of

(a) tRNA from P-site to the A-site

(b) dipeptidyl tRNA from A-site to P-site

(c) tRNA from A-site to P-site

(d) tRNA from P-site to E-site

Answer: (b)

3. The process by which protein synthesis from genetic code occurs is best described by

(a) transcription

(b) translation

(c) replication

(d) reproduction

Answer: (b)

4. This is incorrect about the nature of genetic code.

Codons are

(a) universal

(b) overlapping

(c) commaless

(d) triplet

Answer: (b)

5. This elongation factor is known as translocase

(a) EFG

(b) EF2

(c) both (a) and (b)

(d) EF-Tu and EF-Ts

Answer: (c)

6. This drug inhibits the initiation step of translation

(a) ricin

(b) tetracycline

(c) streptomycin

(d) cyclohexylamine

Answer: (c)

7. In translation, this is not an essential component

(a) amino acid

(b) ligase

(c) mRNA

(d) anticodon

Answer: (b)

8. This identifies a particular amino acid and its cognate tRNA molecule

(a) topoisomerase

(b) rRNA

(c) Ribosome

(d) tRNA synthetase

Answer: (d)

9. Protein synthesis corresponds to the process of

(a) duplicating required DNA for synthesis of proteins

(b) formation of amino acids from mRNA

(c) formation of mRNA from DNA template

(d) formation of amino acids from DNA template directly

Answer: (b)

10. This is considered to be the start codon

(a) AGG

(b) UAG

(c) GUG

(d) AUG

Answer: (d)

Topic- Mendal' s laws

1. After cross-fertilization of true-breeding tall and dwarf plants, the F_1 generation was self-fertilized. The resultant plants have genotype in the ratio

(a) 1:2:1 (homozygous tall : heterozygous tall : dwarf)

(b) 1:2:1 (heterozygous tall : homozygous tall : dwarf)

(c) 3:1 (tall : dwarf)

(d) 3:1 (dwarf : tall)

Answer: (a)

2. Which of the following characteristics of pea plants was not used by Mendel in his experiments?

(a) seed colour

(b) seed shape

(c) pod length

(d) flower position

Answer: (c)

3. Mendel took _____ contrasting characteristics of pea plants.

(a) eight

(b) seven

(c) six

(d) five

Answer: (b)

4. If both genotype and phenotype shows the same ratios of 1:2:1 in the F_2 generation, it shows

(a) incomplete dominance in monohybrid cross

(b) complete dominance in monohybrid cross

(c) dihybrid cross

(d) co-dominance

Answer: (a)

5. Test cross determines

(a) whether two traits are linked or not

(b) the genotype of F_2 plant

(c) whether the two species will breed successfully or not

(d) number of alleles in a gene

Answer: (b)

6. Genotype of dominant plant can be determined by

(a) pedigree analysis

(b) back cross

(c) test cross

(d) dihybrid cross

Answer: (c)

7. Test cross is a

(a) cross between two recessive homozygotes

(b) cross between dominant homozygote and heterozygote

(c) cross between two F_1 hybrids

(d) cross between an F_1 hybrid and recessive homozygote

Answer: (d)

8. Lack of independent assortment of two genes is due to

(a) recombination

(b) crossing over

(c) linkage

(d) repulsion

Answer: (c)

9. The cross where the sources of gametes are reversed is called

(a) reciprocal cross

(b) reverse cross

(c) dihybrid cross

(d) test cross

Answer: (a)

10. The genes for the seven characters chosen by Mendel are located on

(a) four chromosomes

(b) five chromosomes

(c) six chromosomes

(d) seven chromosomes

Answer: (a)

Topic- Linkage and crossing over

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Topic- Plant hormones

1. Indole-3-acetic acid is the most common naturally occurring plant hormone of _____ class

(a) Gibberellin

(b) Auxin

(c) Ethylene

(d) Cytokinin

Answer: (b)

2. This hormone is not a growth inhibitor

(a) Dormin

(b) Abscisic acid

(c) Ethylene

(d) IAA

Answer: (d)

3. _____ is a gaseous plant hormone

(a) IBA

(b) Ethylene

(c) Abscisic acid

(d) NAA

Answer: (b)

4. A widely used rooting hormone is

(a) 2,4, -D

(b) NAA

(c) 2,4,5 – T

(d) Cytokinin

Answer: (b)

5. The leaf defoliator utilized in the Vietnam war by the USA known as "Agent Orange" was

(a) 2,4, -D and 2,4,5 – T

(b) Ethylene

(c) 2,4, -D and NAA

(d) 2,4,5 – T, ethylene and NAA

Answer: (a)

6. Transport of auxin is

(a) non-polar

(b) symplast

(c) apoplast

(d) polar

Answer: (d)

7. Formation of the nodule is induced by

(a) IAA

(b) NAA

(c) IBA

(d) Both (a) and (c)

Answer: (a)

8. This is the precursor of Indole-3-acetic acid

(a) Methionine

(b) Tryptophan

(c) Glycine

(d) Isopentynyl pyrophosphate

Answer: (b)

9. This bioassay is used to detect the presence of auxin

(a) Only tobacco pith culture

(b) Tobacco pith culture and Avena curvature test

(c) Tobacco pith culture and Split pea stem curvature test

(d) Split pea stem curvature test and Avena curvature test

Answer: (d)

10. Which of these is not a function of auxin?

(a) inducing callus formation

(b) inducing dormancy

(c) enhancing cell division

(d) maintaining apical dominance

Answer: (b)

Topic- photoperiodisim

1. _____ influences the process of flowering in plants.

(a) Photoperiod

(b) Water in the soil

(c) The acidity of the soil

(d) Amount of green pigment

Answer: (a)

2. Phytochrome is a photosensitive pigment involved in _____.

(a) Geotropism

(b) Phototropism

(c) Photoperiodism

(d) Photorespiration

Answer: (c)

3. In which of the following living species, phytochrome, the blue-green pigment is found?

(a) Algae

(b) Fungi

(c) Flowering plants

(d) Vascular cryptograms

Answer: (c)

4. The change over from vegetative to reproductive phase in plants takes place in response to_____.

(a) Length of the day

(b) severity of temperature

(c) Oxygen content in the air

(d) mainly the food material available in the soil

Answer: (a)

5. The reversal of etiolation effected by light is called_____.

(a) Photomorphogenesis

(b) Richmond Lang effect

(c) Anisotropic wall expansion

(d) Red-far red light interaction

Answer: (a)

6. A plant that require not less than 10 hours of light to flower is called _____.

(a) Day-neutral plant

(b) Short day plant

(c) Long day plant

(d) None of the above

Answer: (c)

7. Which of the following hormone can replace vernalization?

(a) Auxin

(b) Ethylene

(c) Cytokinins

(d) Gibberellins

Answer: (d)

8. When the dark period of short-day plants is interrupted by brief exposure of light, then the plant _____.

(a) Produces more flowers

(b) Will not bear any flowers

(c) Turns into a long day plant

(d)Produces flowers immediately

Answer: (b)

9. Which of the following pigment involved in red-far red light interconversion?

(a) Cytochrome

(b) Lycopene

(c) Phytochrome

(d) Xanthophyll

Answer: (c)

10. Cholodny-Went theory is based on_____.

(a) Phototropism

(b) Photoperiodism

(c) Photorespiration

(d) Photomorphogenesis

Answer: (a)

Topic- Seed dormancy

1. A few normal seedlings of tomato were placed in a dark room. After a few days, they were found to have turned white-coloured like albinos. Which of these can be used to describe them?

(a) Defoliated

(b) Etiolated

(c) Embolised

(d) Mutated

Answer: (b)

2. Gibberellins can facilitate seed germination due to their influence on

(a) synthesis of abscisic acid

(b) rate of cell division

(c) production of hydrolyzing enzymes

(d) absorption of water through the hard seed coat

Answer: (c)

3. An enzyme which can stimulate the germination of barley seeds is

(a) Invertase

(b) Lipase

(c) Protease

(d) α-amylase

Answer: (d)

4. During the germination of seeds, the seed coat ruptures due to

(a) massive imbibition of water

(b) differentiation of cotyledons

(c) a sudden increase in cell division

(d) massive glycolysis in cotyledons and endosperm

Answer: (a)

5. The proteinaceous part of maize endosperm is

(a) Peripheral layer

(b) scutellum

(c) Apophysis

(d) Aleurone layer

Answer: (d)

6. One of these gases is required for the germination of pea seeds

(a) nitrogen

(b) oxygen

(c) water vapours

(d) hydrogen

Answer: (b)

7. Seed dormancy allows the plants to

(a) develop healthy seeds

(b) reduce viability

(c) overcome unfavourable climatic conditions

(d) prevent deterioration of seeds

Answer: (c)

8. The protective covering over radical during the germination of seeds is

(a) Coleoptile

(b) Epithelium

(c) Suspensor

(d) Coleorhiza

Answer: (d)

9. Which of these compounds can induce seed dormancy?

(a) Potassium nitrate

(b) ABA

(c) Gibberellins

(d) Ethylene

Answer: (b)

10. An albuminous seed showing hypogeal germination is

(a) bean

(b) castor

(c) gram

(d) maize

Answer: (d)