

## **1. THE LIVING WORLD**

- 1. Employment of hereditary principles in the improvement of human race is**  
(a) Euthenics (b) Eugenics(c) Euphenics (d) Ethnology
- 2. Pedology is science of**  
(a) earth (b) soil (c) diseases (d) pollution
- 3. Study of fossils is**  
(a) Palaeontology (b) Herpetology (c) Saurology (d) Organic evolution
- 4. Glycogen is a polymer of**  
(a) galactose (b) glucose (c) fructose (d) sucrose
- 5. Adenine is**  
(a) purine (b) pyrimidine (c) nucleoside (d) nucleotide
- 6. The CO<sub>2</sub> content by volume, in the atmospheric air is about**  
(a) 0.0314 % (b) 0.34 % (c) 3.34 % (d) 4 %
- 7. If there was no CO<sub>2</sub> in the earth's atmosphere the temperature of earth's surface would be**  
(a) higher than the present (b) less than the present  
(c) the same (d) dependent on the amount of oxygen in the atmosphere
- 8. The most important feature of all living systems is to**  
(a) utilize oxygen to generate energy  
(b) replicate the genetic information  
(c) produce gametes  
(d) utilize solar energy for metabolic activities
- 9. Most abundant organic compound on earth is**  
(a) protein (b) cellulose (c) lipids (d) steroids
- 10. Reason of diversity in living being is**  
(a) mutation  
(b) gradual change  
(c) long term evolutionary change  
(d) short term evolutionary change

## **2.BIOLOGICAL CLASSIFICATION –SYSTEMATICS**

- 1. Basic unit or smallest taxon of taxonomy/classification is**  
(a) species (b) kingdom (c) family (d) variety
- 2. Linnaeus evolved a system of nomenclature called**  
(a) monomial (b) vernacular (c) binomial (d) polynomial
- 3. A taxon is**  
(a) a group of related families  
(b) a group of related species  
(c) a type of living organisms  
(d) a taxonomic group of any ranking
- 4. An important criterion for modern day classification is**  
(a) resemblances in Morphology  
(b) anatomical and physiological traits  
(c) breeding habits  
(d) presence or absence of notochord
- 5. Sequence of taxonomic categories is**  
(a) class-phylum-tribe-order-family-genus-species  
(b) division-class-family-tribe-order-genus-species  
(c) division-class-order-family-tribe-genus-species

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

6. The term "Phylum" was given by

(a) Cuvier (b) Haeckel (c) Theophrastus (d) Linnaeus

7. Binomial nomenclature means

(a) one name given by two scientists

(b) one scientific name consisting of a generic and a specific name

(c) two names, one Latinised, other of a person

(d) None of the above

8. "Taxonomy without phylogeny is similar to bones without flesh" is the statement of

(a) Oswald Tippo (b) John Hutchinson (c) Takhtajan (d) Bentham and Hooker

9. Binomial nomenclature consists of two words

(a) genus and species (b) order and family (c) family and genus (d) species and variety

10. Phylogenetic classification is based on

(a) utilitarian system (b) habits (c) overall similarities (d) common evolutionary descent

### **3. BIOLOGICAL CLASSIFICATION -KINGDOM PROTISTA**

1. The vector for sleeping sickness is

(a) house fly (b) tse-tse fly (c) sand fly (d) fruit fly

2. The infective state of malarial parasite Plasmodium that enters human body is

(a) merozoite (b) sporozoite (c) trophozoite (d) minuta form

3. Trypanosoma belongs to class

(a) Sarcodina (b) Zooflagellata (c) Ciliata (d) Sporozoa

4. Malaria fever coincides with liberation of

(a) cryptomerozoites (b) metacryptomerozoites (c) merozoites (d) trophozoites

5. Plasmodium, the malarial parasite, belongs to class

(a) Sarcodina (b) Ciliata (c) Sporozoa (d) Dinophyceae

6. Amoebiasis is prevented by

(a) eating balanced food (b) eating plenty of fruits (c) drinking boiled water (d) using mosquito nets

7. Genetic information in Paramecium is contained in

(a) micronucleus (b) macronucleus (c) Both (a) & (b) (d) mitochondria

8. What is true about Trypanosoma?

(a) Polymorphic (b) Monogenetic (c) Facultative parasite (d) Non-pathogenic

9. African sleeping sickness is due to

(a) Plasmodium vivax transmitted by tse-tse fly (b) Trypanosoma lewisi transmitted by bed bug

(c) Trypanosoma gambiense transmitted by Glossina palpalis

(d) Entamoeba gingivalis spread by house fly

10. Who discovered Plasmodium in RBC of human beings?

(a) Ronald Ross (b) Mendel (c) Laveran (d) Stephen

### **4. BIOLOGICAL CLASSIFICATION -KINGDOM MONERA**

1. Which one belongs to Monera?

(a) Amoeba (b) Escherichia (c) Gelidium (d) Spirogyra

2. A non-photosynthetic aerobic nitrogen fixing soil bacterium is

(a) Rhizobium (b) Clostridium (c) Azotobacter (d) Klebsiella

3. The main difference in Gram (+)ve and Gram (-)ve bacteria resides in their

(a) cell wall (b) cell membrane (c) cytoplasm (d) flagella

4. Bacteria lack alternation of generation because there is

- (a) neither syngamy nor reduction division (b) distinct chromosomes are absent  
(c) no conjugation (d) no exchange of genetic material
5. Name the organisms which do not derive energy directly or indirectly from sun  
(a) chemosynthetic bacteria (b) pathogenic bacteria (c) symbiotic bacteria (d) mould
6. Genophore bacterial genome or nucleoid is made of  
(a) histones and nonhistones (b) RNA and histones (c) a single double stranded DNA  
(d) a single stranded DNA
7. Escherichia coli is used extensively in biological research as it is  
(a) easily cultured (b) easily available (c) easy to handle (d) easily multiplied in host
8. Rickettsiae constitute a group under  
(a) bacteria (b) viruses (c) independent group between bacteria and viruses (d) fungi
9. The term antibiotic was first used by  
(a) Fleming (b) Pasteur (c) Waksman (d) Lister
10. Temperature tolerance of thermal blue-green algae is due to  
(a) cell wall structure (b) cell organization (c) mitochondrial structure  
(d) homopolar bonds in their proteins

## 5. BIOLOGICAL CLASSIFICATION -KINGDOM FUNGI

1. Absorptive heterotrophic nutrition is exhibited by  
(a) algae (b) fungi (c) bryophytes (d) pteridophytes
2. Ustilago caused plant diseases are called smuts because  
(a) they parasitise cereals (b) mycelium is black (c) they develop sooty masses of spores  
(d) affected parts become completely black
3. Decomposers are organisms that  
(a) elaborate chemical substances, causing death of tissues  
(b) operate in living body and simplifying organic substances of cells step by step  
(c) attack and kill plants as well as animals  
(d) operate in relay terms, simplifying step by step the organic constituents of dead body
4. Claviceps purpurea is causal organism of  
(a) smut of barley (b) rust of wheat (c) ergot of rye (d) powdery mildew of pea
5. The chemical compounds produced by the host plants to protect themselves against fungal infection is  
(a) phytotoxin (b) pathogen (c) phytoalexins (d) hormone
6. White rust disease is caused by  
(a) Claviceps (b) Alternaria (c) Phytophthora (d) Albugo candida
7. Most of the lichens consist of  
(a) blue-green algae and Basidomycetes  
(b) blue-green algae and Ascomycetes  
(c) red algae and Ascomycetes  
(d) brown algae and Phycomycetes
8. Yeast-Saccharomyces cerevisiae is used in the industrial production of  
(a) citric acid (b) tetracycline (c) ethanol (d) butanol
9. Which one of the following micro-organisms is used for production of citric acid in industries?  
(a) Penicillium citrinum (b) Aspergillus niger (c) Rhizopus nigricans (d) Lactobacillus bulgaricus
10. Puccinia forms  
(a) uredia and aecia on wheat leaves  
(b) uredia and telia on wheat leaves

- (c) uredia and aecia on barberry leaves
- (d) uredia and pycnia on barberry leaves

## 6. BIOLOGICAL CLASSIFICATION – VIRUS

1. Reverse transcriptase is

- (a) RNA dependent RNA polymerase (b) DNA dependent RNA polymerase
- (c) DNA dependent DNA polymerase (d) RNA dependent DNA polymerase

2. Tobacco Mosaic Virus (TMV) genes are

- (a) double stranded RNA (b) single stranded RNA (c) polyribonucleotides (d) proteinaceous

3. Interferons are

- (a) antiviral proteins (b) antibacterial proteins (c) anticancer proteins (d) complex proteins

4. In which one of the following pairs of diseases

both are caused by viruses?

- (a) Tetanus and typhoid
- (b) Whooping cough and sleeping sickness
- (c) Syphilis and AIDS
- (d) Measles and rabies

5. Influenza virus has

- (a) DNA(b) RNA(c) Both (a) and (b)(d) only proteins and no nucleic acids

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

- (a) Viruses possess their own metabolic system
- (b) Viruses contain either DNA or RNA
- (c) Viruses are facultative parasites
- (d) Viruses are readily killed by antibiotics

7. Human Immunodeficiency Virus (HIV) has a protein coat and a genetic material which is

- (a) single stranded DNA (b) single stranded RNA (c) double stranded RNA (d) double stranded DNA

8. Small proteins produced by vertebrate cells naturally in response to viral infections and which inhibit multiplication of viruses are called

- (a) immunoglobulins (b) interferons (c) antitoxins (d) lipoproteins

9. Cauliflower mosaic virus contains

- (a) ssRNA(b) dsRNA(c) dsDNA(d) ssDNA

10. Interferons are synthesized in response to

- (a) mycoplasma (b) bacteria(c) viruses (d) fungi

## 7. PLANT KINGDOM

1. In Pinus / gymnosperms, the haploid structure are

- (a) megasporangium, endosperm and embryo
- (b) megasporangium, pollen grain and endosperm
- (c) megasporangium, integument and root
- (d) pollen grain, leaf and root

2. Sperms of both Funaria and Pteris were released together near the archegonia of Pteris.

Only Pteris sperms enter the archegonia as

- (a) Pteris archegonia repel Funaria sperms
- (b) Funaria sperms get killed by Pteris sperms
- (c) Funaria sperms are less mobile
- (d) Pteris archegonia release chemical to attract its sperms

- 3. Evolutionary important character of Selaginella is**  
(a) heterosporous nature (b) rhizophore (c) strobili (d) ligule
- 4. Moss peristome takes part in**  
(a) spore dispersal (b) photosynthesis (c) protection (d) absorption
- 5. Apophysis in the capsule of Funaria is**  
(a) lower part (b) upper part (c) middle part (d) fertile part
- 6. Protonema occurs in the life cycle of**  
(a) Riccia (b) Funaria (c) Chlamydomonas (d) Spirogyra
- 7. The product of conjugation in Spirogyra or fertilization of Chlamydomonas is**  
(a) zygospore (b) zoospore (c) oospore (d) carpospore
- 8. The common mode of sexual reproduction in Chlamydomonas is**  
(a) isogamous (b) anisogamous (c) oogamous (d) hologamous
- 9. Which one has the largest gametophyte?**  
(a) Cycas (b) Angiosperm (c) Selaginella (d) Moss
- 10. Bryophytes are amphibians because**  
(a) they require a layer of water for carrying out sexual reproduction  
(b) they occur in damp places  
(c) they are mostly aquatic  
(d) All of the above

#### **8. ANIMAL KINGDOM –NON-CHORDATE PHYLA**

- 1. Jelly fish belongs to class**  
(a) Hydrozoa (b) Scyphozoa (c) Anthozoa (d) None of these
- 2. Earthworms are**  
(a) useful (b) harmful (c) more useful than harmful (d) more harmful
- 3. Photoreceptors of earthworm occur on**  
(a) clitellum (b) many eyes (c) dorsal surface (d) lateral sides
- 4. Transfer of Taenia to secondary host occurs as**  
(a) oncosphere (b) cysticercus (c) morula (d) egg
- 5. In hot summer and cold winter, the number of malaria cases as well as Anopheles declines, reappearance of malaria in humid warm conditions is due to**  
(a) surviving malarial parasites in human carriers  
(b) surviving sporozoites in surviving mosquitoes  
(c) monkeys  
(d) mosquito larvae in permanent waters
- 6. Blood of Pheretima is**  
(a) blue with haemocyanin in corpuscles  
(b) blue with haemocyanin in plasma  
(c) red with haemoglobin in corpuscles  
(d) red with haemoglobin in plasma
- 7. Pheretima posthuma is highly useful as**  
(a) their burrows make the soil loose  
(b) they make the soil porous, leave their castings and take organic debris in the soil  
(c) they are used as fish meal  
(d) they kill the birds due to biomagnifications of chlorinated hydrocarbons
- 8. Malpighian tubules are**  
(a) excretory organs of insects  
(b) excretory organs of annelids

- (c) respiratory organs of insects
- (d) respiratory organs of annelids
- 9. Kala-azar and oriental sore are spread by
  - (a) housefly (b) bed bug (c) sand fly (d) fruit fly
- 10. Bladderworm/cysticercus is the larval stage of
  - (a) tapeworm (b) roundworm (c) pinworm (d) liver fluke

## 9. ANIMAL KINGDOM – PHYLUM CHORDATA

- 1. A chordate character is
  - (a) gills (b) spiracles (c) post-anal tail (d) chitinous exoskeleton
- 2. Fish which can be used in biological control of mosquitoes/larvicidal fish is
  - (a) eel (b) carp (c) cat fish (d) Gambusia
- 3. Eutherians are characterised by
  - (a) hairy skin (b) true placentation (c) ovoviparity (d) glandular skin
- 4. Flight muscles of bird are attached to
  - (a) clavicle (b) keel of sternum (c) scapula (d) coracoid
- 5. Wish bone of birds is formed from
  - (a) pelvic girdle (b) skull (c) hindlimbs (d) pectoral girdle/clavicles
- 6. Skin is a respiratory organ in
  - (a) lizards (b) birds (c) primitive mammals (d) frog
- 7. Penguin occurs in
  - (a) Australia (b) Antarctica (c) Africa (d) America
- 8. Kidney of adult rabbit is
  - (a) pronephros (b) metanephros (c) mesonephros (d) opisthonephros
- 9. Bull frog of India is
  - (a) Rana tigrina (b) R. sylvatica (c) R. Catesbeiana (d) R. esculenta
- 10. An egg laying mammal is
  - (a) kangaroo (b) platypus (c) koala (d) whale

## 10. MORPHOLOGY OF FLOWERING PLANTS

- 1. Floral formula of tomato/tobacco is
  - (a)  K4–5A10G(2)
  - (b)  K2+2 C4A2+4G1
  - (c)  P2A3G1
  - (d) Br  K(5)C(5)A5G(2)
- 2. Mango juice is got from
  - (a) epicarp (b) mesocarp (c) endocarp (d) pericarp and thalamus
- 3. A family delimited by type of inflorescence is
  - (a) Fabaceae (b) Asteraceae (c) Solanaceae. (d) Liliaceae
- 4. New banana plants develop from
  - (a) rhizome (b) sucker (c) stolon (d) seed
- 5. Oil reserve of groundnut is present in
  - (a) embryo (b) cotyledons (c) endosperm (d) underground tubers
- 6. Botanical name of cauliflower is
  - (a) Brassica oleracea var. capitata
  - (b) Brassica campestris
  - (c) Brassica oleracea var. botrytis

- (d) *Brassica oleracea* var. *gemmifera*  
7. Epipetalous and syngenesious stamens occur in  
(a) Solanaceae (b) Brassicaceae (c) Fabaceae (d) Asteraceae  
8. Vegetative reproduction of *Agave* occurs through  
(a) rhizome (b) stolon (c) bulbils (d) sucker  
9. Fruit of *Mangifera indica* is  
(a) berry (b) drupe (c) capsule (d) siliqua  
10. Hypanthodium is  
(a) thalamus (b) fruit (c) inflorescence (d) ovary

## 11. ANATOMY OF FLOWERING PLANT

1. Out of diffuse porous and ring porous woods, which is correct?  
(a) Ring porous wood, carries more water for short period  
(b) Diffuse porous wood carries more water  
(c) Ring porous wood carries more water when need is higher  
(d) Diffuse porous wood is less specialized but conducts water rapidly through out
2. Organization of stem apex into corpus and tunica is determined mainly by  
(a) planes of cell division  
(b) regions of meristematic activity  
(c) rate of cell growth  
(d) rate of shoot tip growth
3. For union between stock and scion in grafting which one is the first to occur?  
(a) Formation of callus  
(b) Production of plasmodesmata  
(c) Differentiation of new vascular tissues  
(d) Regeneration of cortex and epidermis
4. Collenchyma occurs in the stem and petioles of  
(a) xerophytes (b) monocots (c) dicot herbs (d) hydrophytes
5. What is true about a monocot leaf?  
(a) Reticulate venation  
(b) Absence of bulliform cells from epidermis  
(c) Mesophyll not differentiated into palisade and spongy tissues  
(d) Well differentiated mesophyll
6. Pericycle of roots produces  
(a) mechanical support (b) lateral roots (c) vascular bundles (d) adventitious buds
7. Cork cambium and vascular cambium are  
(a) parts of secondary xylem and phloem  
(b) parts of pericycle  
(c) lateral meristems  
(d) apical meristems
8. Monocot leaves possess  
(a) intercalary meristem (b) lateral meristem (c) apical meristem (d) mass meristem
9. Vascular cambium produces  
(a) primary xylem and primary phloem  
(b) secondary xylem and secondary phloem  
(c) primary xylem and secondary phloem  
(d) secondary xylem and primary phloem
10. Where do the Caspary bands occur?  
(a) Epidermis (b) Endodermis (c) Pericycle (d) Phloem

## **STRUCTURAL ORGANISATION IN ANIMALS**

- 1. Mineral found in red pigment of vertebrate blood is**  
(a) magnesium (b) iron (c) calcium (d) copper
- 2. Lymph differ from blood in possessing**  
(a) only WBC  
(b) more RBC and WBC  
(c) more RBC and few WBC  
(d) more WBC and few RBC
- 3. Histamine secreting cells are found in**  
(a) connective tissue  
(b) lungs  
(c) muscular tissue  
(d) nervous tissue
- 4. Haversian canal occurs in**  
(a) humerus (b) pubis (c) scapula (d) clavicle
- 5. Removal of calcium from freshly collected blood would**  
(a) cause delayed clotting  
(b) prevent clotting  
(c) cause immediate clotting  
(d) prevent destruction of haemoglobin
- 6. Haemophilia is**  
(a) royal disease  
(b) faulty blood clotting  
(c) Both (a) and (b)  
(d) mosquito having haemocoel
- 7. A person with blood group A requires blood. The blood group which can be given is**  
(a) A and B (b) A and AB (c) A and O (d) A, B, AB and O
- 8. Which one engulfs pathogens rapidly?**  
(a) Acidophils (b) Monocytes  
(c) Basophils (d) Neutrophils
- 9. Characteristics of smooth muscle fibres are**  
(a) spindle-shaped, unbranched, unstriated, uninucleate and involuntary  
(b) spindle-shaped, unbranched, unstriped, multinucleate and involuntary  
(c) cylindrical, unbranched, unstriped, multinucleate and involuntary  
(d) cylindrical, unbranched, unstriated, multinucleate and voluntary
- 10. Brush border is characteristic of**  
(a) Neck of nephron (b) collecting tube (c) proximal convoluted tubule (d) All of the above

## **14.CELL : THE UNIT OF LIFE -TOOLS AND TECHNIQUES**

- 1. Organelles can be separated from cell homogenate through**  
(a) chromatography (b) X-rays diffraction (c) differential centrifugation (d) auto-radiography
- 2. Electron microscope has a high resolution power. This is due to**  
(a) electromagnetic lenses  
(b) very low wavelength of electron beam  
(c) low wavelength of light source used

- (d) high numerical aperture of glass lenses used
3. Magnification of compound microscope is not connected with  
(a) numerical aperture (b) focal length of objective (c) focal length of eye piece (d) tube length
4. Resolution power is the ability to  
(a) distinguish two trees  
(b) distinguish two close objects  
(c) distinguish amongst organelles  
(d) magnify image
5. Angstrom ( $\text{\AA}$ ) is equal to  
(a) 0.01  $\mu\text{m}$  (b) 0.001  $\mu\text{m}$  (c) 0.0001  $\mu\text{m}$  (d) 0.00001  $\mu\text{m}$
6. Binding of specific protein on regulatory DNA sequence can be studied by means of  
(a) ultra centrifugation  
(b) electron microscope  
(c) light microscope  
(d) X-rays crystallography
7. A student wishes to study the cell structure under a light microscope having 10X eyepiece and 45X objective. He should illuminate the object by which one of the following colours of light so as to get the best possible resolution?  
(a) Blue (b) Green (c) Yellow (d) Red
8. A major breakthrough in the studies of cells came with the development of electron microscope. This is because  
(a) the resolving power of the electron microscope is 200-350 nm as compared to 0.1- 0.2 for the light microscope  
(b) electron beam can pass through thick materials, whereas light microscopy required thin sections  
(c) the electron microscope is more powerful than the light microscope as it uses a beam of electrons which has wavelength much longer than that of photons  
(d) the resolution power of the electron microscope is much higher than that of the light microscope
9. Gel electrophoresis is used for  
(a) cutting of DNA into fragments (b) separation of DNA fragments according to their size  
(c) construction of recombinant DNA by joining with cloning vectors (d) isolation of DNA molecule

#### **15.CELL : THE UNIT OF LIFE -CELL STRUCTURE**

1. Polyribosomes are aggregates of  
(a) ribosomes and rRNA (b) only rRNA (c) peroxisomes (d) several ribosomes held together by string of mRNA
2. Plasma membrane is made up of  
(a) proteins and carbohydrates  
(b) proteins and lipids  
(c) proteins, lipids and carbohydrates  
(d) proteins, some nucleic acid and lipids
3. Fluid mosaic model of cell membrane was put forward by  
(a) Danielli and Davson  
(b) Singer and Nicolson  
(c) Garner and Allard  
(d) Watson and Crick
4. Addition of new cell wall particles amongst the existing ones is  
(a) deposition (b) apposition (c) intussusceptions (d) aggregation

**5. Cell wall shows**

- (a) complete permeability
- (b) semi-permeability
- (c) differential permeability
- (d) impermeability

**6. Ribosomes were discovered by**

- (a) Golgi
- (b) Porter
- (c) de Robertis
- (d) Palade

**7. Ribosomes are the centre for**

- (a) respiration
- (b) photosynthesis
- (c) protein synthesis
- (d) fat synthesis

**8. An outer covering membrane is absent over**

- (a) nucleolus
- (b) lysosome
- (c) mitochondrion
- (d) plastids

**9. All plastids have similar structure because they can**

- (a) store starch, lipids and proteins
- (b) get transformed from one type to another
- (c) perform same function
- (d) be present together

**10. Oxsomes or F0-F1 particles occur on**

- (a) thylakoids
- (b) mitochondrial surface
- (c) inner mitochondrial membrane
- (d) chloroplast surface

**IN PEOPLE SERVICE**

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