

**Medicine Paper 1**

1. The base quantity among the following is

- (a) Speed
- (b) Weight
- (c) Length
- (d) Area

**Answer:** c  
**Solution**

There are seven base quantities, (i) Mass (ii) Length (iii) Time (iv) Current (v) Amount of substance (vi) Luminous intensity (vii) Temperature

2. Which of the following is not a unit of time?

- (a) Second
- (b) Minute
- (c) Hour
- (d) Light year

**Answer:** d  
**Solution**

Light year is the unit of distance. 1 light year =  $9.46 \times 10^{15}m$

3. One astronomical unit is a distance equal to

- (a)  $9.46 \times 10^{15}m$
- (b)  $1.496 \times 10^{11}m$
- (c)  $3 \times 10^8m$
- (d)  $3.08 \times 10^{16}m$

**Answer:** b  
**Solution**

One astronomical unit is the average distance between earth and sun. 1 astronomical unit (AU) =  $1.496 \times 10^{11}m$

4. The volume of a cube having sides 1.2 m is appropriately expressed as

- (a)  $1.728 \times 10^6 cm^3$
- (b)  $1.7 \times 10^6 cm^3$
- (c)  $1.8 \times 10^6 cm^3$
- (d)  $1.73 \times 10^6 cm^3$

**Answer:** b  
**Solution**

The volume of cube is

$$v = (1.2cm)^3 = 1.728 \times 10^6 cm^3$$

$$v \simeq 1.7 \times 10^6$$

Answer should be reported in minimum number of significant figures

5. Ampere second is a unit of

- (a) Current
- (b) Charge
- (c) Energy
- (d) Power

**Answer:** b  
**Solution**

$$\text{Current } I = \frac{q}{t} \Rightarrow q = It$$

$$q = \text{Ampere second}$$

So, ampere second is the unit of charge.

6. The most precise reading of the mass of an object, among the following is

- (a) 20 g
- (b) 20.0 g
- (c) 20.01 g
- (d)  $20 \times 10^0 g$

**Answer:** c  
**Solution**

A measurement having more number of decimal places is the one with the most precision. So, 20.01 g is most precise.

7. The most accurate reading of the length of a 6.28 cm long fibre is

- (a) 6 cm
- (b) 6.5 cm
- (c) 5.99 cm
- (d) 6.0 cm

**Answer:** b  
**Solution**

Most accurate reading is the one having minimum error. So,

$$16 - 6.281 = 0.28cm$$

$$16.5 - 6.281 = 0.22cm$$

$$15.99 - 6.281 = 0.29cm$$

$$16.0 - 6.281 = 0.28cm$$

So, second reading is most accurate.

8. Which of the following is a unit that of force?

- (a) N m
- (b) mN
- (c) nm
- (d) N s

**Answer:** b  
**Solution**

$$Nm \rightarrow \text{Unit of torque}$$

$$mN \rightarrow \text{Milli newton} \Rightarrow 10^{-3}N$$

$$nm \rightarrow \text{Nano metre}$$

$$Ns \rightarrow \text{Unit of momentum}$$

9. The total plane angle subtended by a circle at its centre is

- (a)  $\pi$  rad
- (b)  $2\pi$  rad
- (c)  $\frac{2\pi}{3}$  rad
- (d)  $\frac{\pi}{2}$  rad

**Answer:** b  
**Solution**

The total plane angle is  $360^\circ$  or  $2\pi$  rad

10. One unified atomic mass unit represents a mass of magnitude

- (a)  $10^{-30}$  kg
- (b)  $1.66 \times 10^{27}$  kg
- (c)  $1.66 \times 10^{-27}$  kg
- (d)  $10^{30}$  kg

**Answer:** c  
**Solution**

$$1 \text{ amu} = 1.66 \times 10^{-27} \text{ kg}$$

11. Which of the following does not possess the same dimensions as that of pressure?

- (a) Stress
- (b) Bulk modulus
- (c) Thrust
- (d) Energy density

**Answer:** c

12. The dimensional formula for thermal resistance is

- (a)  $[ML^2T^{-3}K^{-1}]$
- (b)  $[ML^2T^{-2}A^{-1}]$
- (c)  $[ML^2T^{-3}K^{-2}]$
- (d)  $[M^{-1}L^2T^3K]$

Answer: d

13. The units of length; velocity and force are doubled. Which of the following is the correct change in the other units

- (a) Unit of time is doubled
- (b) Unit of mass is doubled
- (c) Unit of momentum is doubled
- (d) Unit of energy is doubled

Answer: c

14. Which one of the following is not the dimensionless quantity?

- (a) Plancks constant
- (b) Dielectric constant
- (c) Solid angle
- (d) Strain

Answer: a

15. The dimensions of impulse are equal to that of

- (a) force
- (b) linear momentum
- (c) pressure
- (d) angular momentum

Answer: b

16. The dimensions of the ratio of angular to linear momentum is

- (a)  $[M^0LT^0]$
- (b)  $[MLT^{-1}]$
- (c)  $[ML^2T^{-1}]$
- (d)  $[M^{-1}L^{-1}T^{-1}]$

Answer: a

17. The dimensional representation of specific resistance in terms of charge Q is

- (a)  $[ML^3T^{-1}Q^{-2}]$
- (b)  $[ML^2T^{-2}Q^2]$
- (c)  $[MLT^{-2}Q^{-1}]$
- (d)  $[ML^2T^{-2}Q^{-1}]$

Answer: a

18. Out of the following four dimensional quantities; which one qualifies to be called a dimensional constant?

- (a) Acceleration due to gravity
- (b) Surface tension of water
- (c) Weight of a standard kilogram mass
- (d) The velocity of light in vacuum

Answer: d

19. On measuring electric energy; 1 kWh is equal to

- (a)  $3.6 \times 10^4 J$
- (b)  $3.6 \times 10^6 J$
- (c)  $7.3 \times 10^6 J$
- (d) None of these

Answer: b

20.  $ML^{-1}T^{-1}$  stand for dimensions of

- (a) work
- (b) torque
- (c) linear momentum
- (d) coefficient of viscosity

Answer: a

21. Haemoglobin contains 0.334% of iron by weight. The molecular weight of haemoglobin is approximately 67200. The number of iron atoms at (at weight of Fe is 56) present in one molecule of haemoglobin are

- (a) 1
- (b) 6
- (c) 4
- (d) 2

Answer: c

22. If the uncertainty in the position of electron is zero, the uncertainty in its momentum would be

- (a) zero
- (b) greater than  $\frac{h}{4}\pi$
- (c) less than  $\frac{h}{4}\pi$
- (d) infinite

Answer: d

Solution

$$\Delta p = \frac{h}{4\pi\Delta x} = \frac{h}{4\pi \times zero} = \infty \text{ (infinite)}$$

23. What mass of  $H_2(g)$  is needed to reduce 192gm. of  $MoO_3$  to metal? [At wt. of Mo=96]

- (a) 8gm
- (b) 16gm
- (c) 32gm
- (d) None of these

Answer: a

Solution

$$\text{Equivalent of } MoO_3 = \frac{M}{6} = \frac{144}{6} = 24$$

$$\text{equivalent of } H_2 : \frac{192}{24} = \frac{W_{H_2}}{1} \Rightarrow W_{H_2} = 8gm.$$

24. If  $E_1, E_2$ ; and  $E_3$  represents respectively the kinetic energies of an electron and an alpha particle and a proton each having same de brogile wavelength then

- (a)  $E_1 > E_3 > E_2$
- (b)  $E_2 > E_3 > E_1$
- (c)  $E_1 > E_2 > E_3$
- (d)  $E_1 = E_2 = E_3$

Answer: a

Solution

$$\text{Since K.E.} = \frac{1}{2}mv^2 \text{ and } \lambda = \frac{h}{mv}.$$

$$\therefore K.E. = \frac{1}{2}m \cdot \frac{h^2}{m^2\lambda^2} = \frac{h^2}{2m\lambda^2}. \text{ As } \lambda \text{ is the same.}$$

$$\therefore K.E. \propto \frac{1}{m}$$

25. The shortest wavelength of the line in hydrogen atomic spectrum of Lyman series when  $R_H = 109678cm^{-1}$  is

- (a)  $1002.7 \text{ \AA}$
- (b)  $1215.67 \text{ \AA}$
- (c)  $1127.30 \text{ \AA}$
- (d)  $911.7 \text{ \AA}$

Answer: a

Solution

$$\bar{\nu} = \frac{1}{\lambda} = R_H \left( \frac{1}{n_1^2} - \frac{1}{n_2^2} \right)$$

For Lyman series,  $n_1 = 1$  and  $n_2 = \infty$

$$\text{then, } \frac{1}{\lambda} = R_H \left( \frac{1}{(1)^2} - \frac{1}{\infty} \right)$$

$$\text{or, } \lambda = \frac{1}{R_H} \text{ or } \lambda = \frac{1}{109678}$$

$$= 911.7 \times 10^{-8} \text{ cm} = 911.7 \text{ \AA}$$

26. The work function of a metal is 5 eV. what is the kinetic energy of the photoelectron ejected from the metal surface if the energy of the incident radiation is 6.2 eV? ( $1\text{eV} = 1.6 \times 10^{-19}\text{J}$ )

- (a)  $6.626 \times 10^{-19}\text{J}$
- (b)  $8.01 \times 10^{-19}\text{J}$
- (c)  $1.92 \times 10^{-18}\text{J}$
- (d)  $8.010 \times 10^{-18}\text{J}$

Answer: c  
Solution

$$K.E. = h\nu - h\nu_0 = 6.2 - 5.0 = 1.2\text{eV}$$

$$1\text{eV} = 1.6 \times 10^{-19}\text{J}$$

$$\begin{aligned} \text{then } 1.2\text{eV} &= 1.2 \times 1.6 \times 10^{-19}\text{J} \\ &= 1.92 \times 10^{-19}\text{J} \end{aligned}$$

27. The maximum number of molecules is present in

- (a) 15 L of  $\text{H}_2$  gas at STP
- (b) 5 L of  $\text{N}_2$  gas at STP
- (c) 0.5 g of  $\text{H}_2$  gas
- (d) 10 g of  $\text{O}_2$  gas

Answer: a  
Solution

No. of molecules in different cases

$$\begin{aligned} \text{(a) } \therefore 22.4 \text{ litre at STP contains} \\ &= 6.023 \times 10^{23} \text{ molecule of } \text{H}_2 \\ \therefore 15 \text{ litre at STP contains} \end{aligned}$$

$$= \frac{15}{22.4} \times 6.023 \times 10^{23}$$

$$\begin{aligned} \text{(b) } \therefore 22.4 \text{ litre at STP contains} \\ &= 6.023 \times 10^{23} \text{ molecule of } \text{N}_2 \end{aligned}$$

$$\therefore 5 \text{ litre at STP contains} = \frac{5}{22.4} \times 6.023 \times 10^{23}$$

$$\text{(c) } \therefore 2 \text{ gm of } \text{H}_2 = 6.023 \times 10^{23} \text{ molecules of } \text{H}_2$$

$$\therefore 0.5 \text{ gm of } \text{H}_2 = \frac{0.5}{2} \times 6.023 \times 10^{23}$$

$$\begin{aligned} \text{(d) Similarly } 10\text{g of } \text{O}_2 \text{ gas} \\ &= \frac{10}{32} \times 6.023 \times 10^{23} \text{ molecules} \end{aligned}$$

Thus (a) will have maximum number of molecules

28. The vapour density of a gas is 11.2 then 11.2 g of this gas at N.T.P. will occupy a volume

- (a) 11.2L
- (b) 22.4L
- (c) 11.2mL
- (d) 22.4mL

Answer: a  
Solution

Vapour density of any gas occupies a volume of 11.2 litre at N.T.P.

29. Which of the following sets of quantum numbers represents the highest energy of atom?

- (a)  $n=3; l=0 m=0 s=+1/2$
- (b)  $n=3; l=1 m=1 s=+1/2$
- (c)  $n=3; l=2 m=1 s=+1/2$
- (d)  $n=4; l=0 m=0 s=+1/2$

Answer: c  
Solution

(a)  $n=3, l=0$  means 3s-orbital and  $n+1=3$

(b)  $n=3, l=1$  means 3p-orbital  $n+1=4$

(c)  $n=3, l=2$  means 3d-orbital  $n+1=5$

(d)  $n=4, l=0$  means 4s-orbitl  $n+1=4$

Increasing order of energy among these orbitals is

$$3s < 3p < 4s < 3d$$

$\therefore$  3d has highest energy

30. A binary compound of elements X and Y contains 50% of X. If the atomic masses of X and Y are 10 and 20 and the molecular mass of the compound is 120, the molecular formula of the compound is

- (a)  $\text{X}_2$
- (b)  $\text{X}_4\text{Y}_2$
- (c)  $\text{X}_6\text{Y}_3$
- (d)  $\text{X}_3\text{Y}_2$

Answer: c  
Solution

$$\text{X} \rightarrow \frac{50}{10} = 5 \rightarrow 2, \text{ simple ratio } \text{Y} \rightarrow \frac{50}{20} = 2.5 \rightarrow 1, \text{ simple ratio}$$

$$\text{Empirical formula} = \text{X}_2\text{Y} \text{ Empirical formula mass} = 40 \text{ n} = \frac{120}{40} = 3$$

$$\text{M.F} = (\text{E. F})_3 = \text{X}_6\text{Y}_3$$

31. The molecular formula of a compound is  $\text{M}_6\text{O}_1$ . If 20g of the compound contains 9g of the metal, atomic mass of the metal is

- (a) 40
- (b) 36
- (c) 28
- (d) 24

Answer: d  
Solution

$$\text{Atomic mass of the metal} = \text{X } 6x / (6x + 11 \times 16) = 9/20 \text{ X} = (9 \times 11 \times 16 / 11 \times 6) = 24$$

32. Which of the following at STP contains largest number of atoms?

- (a)  $800\text{cm}^3$  of  $\text{O}_2$
- (b)  $500\text{cm}^3$  of  $\text{NH}_3$
- (c)  $600\text{cm}^3$  of  $\text{SO}_2$
- (d)  $700\text{cm}^3$  of  $\text{O}_3$

Answer: d  
Solution

$$\text{Number of atoms From A.} = \frac{2 \times 800}{22400} \times 6.022 \times 10^{23} \text{ From B.} =$$

$$\frac{3 \times 500}{22400} \times 6.022 \times 10^{23} \text{ From C.} = \frac{3 \times 600}{22400} \times 6.022 \times 10^{23} \text{ From D.}$$

$$= \frac{3 \times 700}{22400} \times 6.022 \times 10^{23}$$

33. At STP, volume of 0.01g of  $\text{H}_2$  is the same as that of

- (a) 0.22g of  $\text{CO}_2$
- (b) 0.085g of  $\text{NH}_3$
- (c) 0.32g of  $\text{SO}_2$
- (d) all of these

Answer: d  
Solution

$$\text{Volume of } 0.01\text{g of } \text{H}_2 \text{ at STP} = \frac{0.01}{2} \times 22.414\text{L} \text{ Volume of } 0.22\text{g}$$

$$\text{of } \text{CO}_2 = \frac{0.22}{44} \times 22.414\text{L} \text{ Volume of } 0.085\text{g of } \text{NH}_3 = \frac{0.085}{17}$$

$$\times 22.414\text{L} \text{ Volume of } 0.32\text{g of } \text{SO}_2 = \frac{0.32}{64} \times 22.414\text{L}$$

34.  $6.022 \times 10^{20}$  molecules of urea are present in 100ml of its solution. The concentration of urea solution is

- (a) 0.001 M
- (b) 0.01 M
- (c) 0.02 M
- (d) 0.1 M

Answer: b  
Solution

$$\text{No of moles of urea} = \frac{6.022 \times 10^{20}}{6.022 \times 10^{23}} = 0.001\text{mol} \text{ Concentration of}$$

$$\text{solution} = \frac{W_B}{M_B} \times \frac{1000}{V_{mL}} = 0.001\text{mol} \times \frac{1000}{100\text{L}} = 0.01\text{molL}^{-1} =$$

$$0.01\text{ M}$$

35. No of  $H_2O$  molecules in a drop of water weighing 0.05g is:

- (a)  $1.5 \times 10^{23}$
- (b)  $1.672 \times 10^{21}$
- (c)  $1.5 \times 10^{20}$
- (d)  $6.022 \times 10^{22}$

Answer: b

Solution

1.80g of  $H_2O$  contain molecules =  $6.022 \times 10^{23}$  0.05g of  $H_2O$

$$\text{contain molecules} = \frac{(0.05g)}{(18.0g)} \times 6.022 \times 10^{23} = 1.672 \times 10^{21}$$

$$\text{molecules} = 1.672 \times 10^{21}$$

36. Maximum number of electrons in a subshell of an atom is determined by the following

- (a)  $2l + 1$
- (b)  $4l + 1$
- (c)  $2n^2$
- (d)  $4l + 2$

Answer: d

Solution

For a given value of l, maximum number of electrons in a subshell =  $2(2l + 1) = 4l + 2$

37. Bohr's radius for the H -atom ( n = 1) is approximately 0.53 Ampere. The radius of the first excited state ( n = 2) is

- (a) 0.13 A
- (b) 1.06 A
- (c) 4.77 A
- (d) 2.12 A

Answer: d

Solution

The radius of first excited state orbit ( n = 2) =  $0.53 \text{ A} \times 4 = 2.12 \text{ A}$

38. The following quantum number are possible for how many orbitals? ( n = 3, l = 2, m = +2)

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Answer: a

Solution

m = +2 represents only one orbital

39. The value of Planck's constant is  $6.63 \times 10^{-34}$  Js. The velocity of light is  $3.0 \times 10^8 \text{ ms}^{-1}$ . Which value of wavelength in nanometers of a quantum of light with frequency of  $8 \times 10^{15} \text{ s}^{-1}$ ?

- (a)  $2 \times 10^{-25}$
- (b)  $5 \times 10^{-18}$
- (c)  $4 \times 10^1$
- (d)  $3 \times 10^7$

Answer: c

Solution

$$\text{According to wave theory } \lambda = \frac{c}{\nu} = \frac{(3 \times 10^8 \text{ ms}^{-1})}{8 \times 10^{15} \text{ s}^{-1}} =$$

$$37.5 \times 10^{-9} \text{ m} = 37.5 \text{ nm} = 4 \times 10^1$$

40. Which of the following represents the electron probability function (D)?

- (a)  $4\pi r dr \Psi^2$
- (b)  $4\pi r^2 dr \Psi$
- (c)  $4\pi r^2 dr \Psi^2$
- (d)  $4\pi r dr \Psi$

Answer: c

Solution

Electron probability function is  $4\pi r^2 dr \Psi^2$

41. The label of a herbarium sheet does not carry information on

- (a) Date of collection
- (b) Name of collector
- (c) Local names
- (d) Height of the plant

Answer: d

Solution

The label providing information about date and place of collection, english local and botanical names. Family, collectors name etc are carried by the herbarium sheets.

42. Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature?

- (a) Biological names can be written in any language
- (b) The first word in a biological name represents the genus name and the second is a species epithet
- (c) The names are written in Latin and are italicised
- (d) When written by hand, the names are to be underlined

Answer: a

Solution

General biological names are in Latin

43. Which one of the following is not a correct statement?

- (a) A museum has collection of photographs of plants and animals.
- (b) Key is a taxonomic aid for identification of specimen.
- (c) Herbarium houses dried, pressed and preserved plant specimens.
- (d) Botanical gardens have collection of living plants for reference.

Answer: a

Solution

Collection of preserved plants and animals, specimens for study and reference etc. are found in Museums. Collection of skeletons and animals are also found in Museums. Plant and animal specimens are also preserved as dry specimen. Insects after collecting, killing and pinning are preserved in insect boxes. Larger animals like birds and mammals are usually stuffed and preserved.

44. Which one of the following animals is correctly with its particular taxonomic category?

- (a) Tiger - tigris, species
- (b) Cuttlefish - mollusca, class
- (c) Humans - primata, family
- (d) Housefly - Musca, order

Answer: a

Solution

The Swedish Linnaeus [Carle Linne] devised Binomial nomenclature system of naming organisms using a two - part Latinized name, also known as the Linnaean system. The first part is generic name, and the second is the specific name.

45. Phylogenetic system of classification is based on

- (a) Morphological features
- (b) Chemical constituents
- (c) Floral characters
- (d) Evolutionary relationships

Answer: d

Solution

The base of Phylogenetic system or cladistics is the evolutionary sequence as well as the genetic relationship among the living beings. Engler and Prantl's system of classification was jointly proposed in Die Naturlichen pflanzen Familien in 1892. It is the first phylogenetic system of classification. It includes all the plants from algae to angiosperm arranged in an evolutionary sequence from simplicity to complexity.

46. Which one of the following scientist's name is correctly matched with the theory put forth by him?

- (a) Weismann - Theory of continuity of germplasm
- (b) Pasteur- Inheritance of acquired characters
- (c) Devries - Natural selection
- (d) Mendel - Theory of pangenesis

Answer: a

Solution

Weismann - Theory of continuity of germ plasm. Pasteur - Germ theory of disease Devries - Mutation theory Mendel - Laws of inheritance

47. Which one of the following is wrong for fungi?

- (a) They are eukaryotic
- (b) All fungi possess a purely cellulose cell wall
- (c) They are heterotrophic
- (d) They are both unicellular and multi-cellular

**Answer:** b

**Solution**

Fungi cell wall is made up of chitin and polysaccharides.

48. Methanogens belong to

- (a) Eubacteria
- (b) Archaeobacteria
- (c) Dinoflagellates
- (d) Slime moulds

**Answer:** b

**Solution**

Archaeobacteria - Methanogens, halophiles and thermoacidophiles.

49. Which of the following statements is wrong for viroids?

- (a) They lack a protein coat
- (b) They are smaller than viruses
- (c) They cause infections
- (d) Their RNA is of high molecular weight

**Answer:** d

**Solution**

Viroids RNA is of low molecular weight

50. Which of the following are likely to be present in sea water?

- (a) Blue-green algae
- (b) Saprophytic fungi
- (c) Archaeobacteria
- (d) Eubacteria

**Answer:** c

**Solution**

The methanogenic bacteria which produce methane. The thermoacidophilic bacteria which live in extremely hot and halophilic bacteria which can only function at high salt concentrations and are abundant in world oceans are called Archaeobacteria. It belongs to a group of prokaryotic organisms called monera.

51. Select wrong statement.

- (a) The viroids were discovered by DJ Ivanowski.
- (b) WM Stanley showed that viruses could be crystallized.
- (c) The term 'contagium vivum fluidum' was coined by MW Beijerinck.
- (d) Mosaic disease in tobacco and AIDS in human being are caused by viruses.

**Answer:** a

52. Cell wall is absent in

- (a) Aspergillus
- (b) Funaria
- (c) Mycoplasma
- (d) Nostoc

**Answer:** c

**Solution**

Mycoplasma lacks true or rigid cell wall. A trilaminar (triple layered), highly elastic cell membrane of about 10 nm thickness is surrounded by cytoplasm.

53. Read the following five 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 (D)
- (b) (A), (D) and (E)
- (c) (B), (C) and (E)
- (d) (A), (C) and (D)

**Answer:** b

**Solution**

Selaginella is a heterosporous pteridophyte. It contains micro and mega spores. In cycas coralloid root has cyanobacteria-Anabaena.

54. Viruses have

- (a) DNA enclosed in a protein coat
- (b) Prokaryotic nucleus
- (c) Single Chromosome
- (d) Both DNA and RNA

**Answer:** a

**Solution**

Viruses are able to utilise synthetic machinery of a living cell of the host organism for its multiplication which does not involve growth and division. They are nucleoprotein entities.

55. How many organisms in the list given below are autotrophs?

Lactobacillus, Nostoc, Chara, Nitrosomonas, Nitrobacter, Streptomyces, Saccharomyces, Trypanosomes, Porphyra, Wolffia

- (a) Four
- (b) Five
- (c) Six
- (d) Three

**Answer:** c

**Solution**

Organisms that are able to make energy containing organic molecules from inorganic molecules from inorganic raw materials by using basic sunlight are known as Autotrophs.

56. Read the following five statements (A-E) and answer the question

(A) In Equisetum the female gametophyte is retained on the parent sporophyte.

(B) In Ginkgo male gametophyte is not independent

(C) The sporophyte in Riccia is more developed than that in polytrichum.

(D) The spores of slime molds lack cell walls.

How many of the above statements are correct?

- (a) Two
- (b) Three
- (c) Four
- (d) One

**Answer:** a

**Solution**

Statements A and B are correct. Volvox is a fresh water green colonial algae. Riccia is liverwort in which simplest a sporophyte consists of capsule only white polytrichum is moss in which sporophyte consists of foot seta and capsule. Sexual reproduction is oogamous. Slime molds are consumer decomposer protists. They possess characters of plants, animals and fungi.

57. In the five-kingdom classification, Chlamydomonas and Chlorella have been included in

- (a) Protista
- (b) Algae
- (c) Plantae
- (d) Monera

**Answer:** a

**Solution**

(1) R.H. Whittaker (1969) an American taxonomist divided all the organisms into five kingdoms for developing phylogenetic classification. He has adopted five criteria for eliminating the different kingdoms. They are (i) Complexity of cell structure, prokaryotic and eukaryotic. (2) Complexity of body structure or structural organisation, unicellular and multicellular. (3) Mode of nutrition which is divergent in multicellular kingdoms. (4) Ecological life style like producers, decomposers and consumers. (5) Phylogenetic relationships.

58. Which one of the following is incorrectly matched?

- (a) Root pressure - guttation
- (b) Puccinia - smut
- (c) Root - exarch protoxylem
- (d) Cassia - imbricate aestivation

**Answer:** b

**Solution**

Common name of Puccinia is rust fungus. Smut is Ustilago. Both rust and smut belong to the class Basidiomycetes

59. The pathogen *Microsporum* responsible for ringworm disease in humans belongs to the same kingdom of organisms as that of

- (a) *Taenia*, a tapeworm
- (b) *Wuchereria*, a filarial worm
- (c) *Rhizopus*, a mould
- (d) *Ascaris*, a round worm

**Answer:** c

**Solution**

*Microsporum* the pathogen is genus of kingdom fungi that causes diseases of skin and hair in humans and animals like dog, cat, monkey etc. Ringworm is caused by the dermatophyte fungi species of *Microsporum*, *Trichophyton* and *Epidermophyton*. *Rhizopus* a black bread mould belongs to group *Zygomycetes* of kingdom fungi.

60. Which of the following is a symbiotic nitrogen fixer?

- (a) *Azotobacter*
- (b) *Frankia*
- (c) *Azolla*
- (d) *Glomus*

**Answer:** b