Physics

1. The position of the particle moving along Y-axis is given as $y = At^2 - Bt^3$, where y is measured in metre and t in second. Then the dimensions of B is
   (a) $[LT^{-2}]$ (b) $[LT^{-1}]$
   (c) $[LT^{-3}]$ (d) $[MLT^{-2}]$

2. A conveyor belt is moving horizontally at a speed of 4 m/s. A box of mass 20 kg is gently laid on it. It takes 0.1s for the box to come to rest. If the belt continues to move uniformly, then the distance moved by the box on the conveyor belt is
   (a) zero (b) 0.2 m
   (c) 0.4 m (d) 0.8 m

3. An open knife edge of mass m is dropped from a height h on a wooden floor. If the blade penetrates s into the wood the average resistance offered by the wood to the blade is
   (a) Mg (b) $Mg\left(\frac{h}{s}\right)$
   (c) $Mg\left(1-\frac{h}{s}\right)$ (d) $Mg\left(1+\frac{h}{s}\right)^2$

4. Energy required to accelerate a car from 10 m/s to 20 m/s compared with that required to accelerate it from 0 to 10 m/s is
   (a) twice (b) thrice
   (c) four times (d) same

5. A solid sphere of mass 2 kg rolls up a 30° incline with an initial speed of 10 m/s. The maximum height reached by the sphere is ($g = 10$ m/s^2)
   (a) 3.5 m (b) 7.0 m
   (c) 10.5 m (d) 14.0 m

6. Two satellites are moving in the same circular orbit around the earth. They must have the same
   (a) mass
   (b) angular momentum
   (c) kinetic energy
   (d) speed

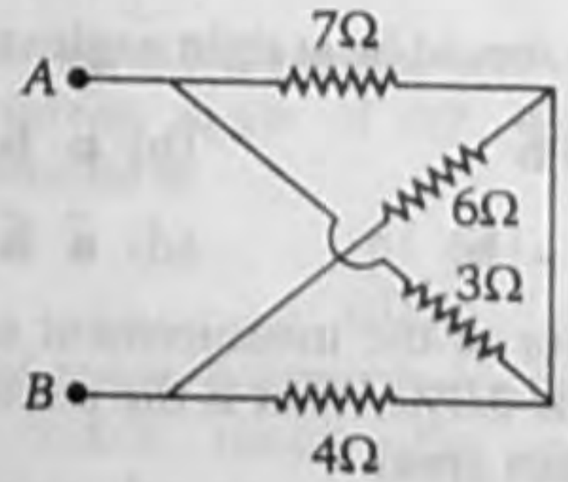
7. A planet having average surface temperature T_0 at an average distance d from the sun. Assuming that the planet receives radiant energy from the sun only and it loses radiant energy only from the surface and neglecting all other atmospheric effects we conclude
   (a) $T_0 \propto d^2$ (b) $T_0 \propto d^{-2}$
   (c) $T_0 \propto d^{1/2}$ (d) $T_0 \propto d^{-1/2}$

8. Time period of a simple pendulum is T. If its length increases by 2%, the new time period becomes
   (a) 0.98 T (b) 1.02 T
   (c) 0.99 T (d) 1.01 T

9. A boat of anchor is rocket by waves of velocity 25 m/s having crests 100 m apart. They reach the boat once every
   (a) 4.0 s (b) 8.0 s
   (c) 2.0 s (d) 0.25 s

10. Two point charges +2C and +6C repel each other with a force of 12 N. If a charge of –2C is given to each of these charges the force will now be
    (a) zero (b) 8 N (attractive)
    (c) 8 N (repulsive) (d) None of these

11. The equivalent resistance between A and B (of the circuit shown) is



    (a) 4.5 Ω (b) 12 Ω
    (c) 5.4 Ω (d) 20 Ω

12. A 2 kW boiler used for 1 h/day consumes the following electrical energy in thirty days

(a) 60 unit (b) 120 unit

(c) 15 unit (d) 6×10^4 unit

13. Two long straight wires are set parallel to each other at separation r and each carries a current I in the same direction. The strength of the magnetic field at any point midway between the two wires is

(a) $\frac{\mu_0 I}{\pi r}$ (b) $\frac{2\mu_0 I}{\pi r}$

(c) $\frac{\mu_0 I}{2\pi r}$ (d) zero

14. A inductive coil has a resistance of 100 Ω. When an AC signal of frequency 1000 Hz is applied to the coil, the voltage leads the current by 45°. The inductance of the coil is

(a) $\frac{1}{10\pi}$ (b) $\frac{1}{20\pi}$

(c) $\frac{1}{40\pi}$ (d) $\frac{1}{60\pi}$

15. A boy stands straight in front of a mirror at a distance of 30 cm from it. He sees his erect image whose height is $\frac{1}{5}$ of his real height. The mirror he is using, is

(a) plane
(b) convex
(c) concave
(d) plano-concave

16. In the depletion region of an unbiased p-n junction diode, there are

(a) only electrons
(b) only holes
(c) both electrons and holes
(d) only fixed ions

17. The condition under which vectors $(\vec{a} + \vec{b})$ and $(\vec{a} - \vec{b})$ should be at right angles to each other is

(a) $\vec{a} \neq \vec{b}$ (b) $\vec{a} \cdot \vec{b} = 0$

(c) $|\vec{a}| = |\vec{b}|$ (d) $\vec{a} \cdot \vec{b} = 1$

18. The error in the measurement of radius of the sphere is 0.3%. What is the permissible error in its surface area?

(a) 0.6% (b) 1.2%

(c) 1.8% (d) 2.4%

19. A gas is heated at constant pressure. The fraction of heat supplied used for external work is

(a) $\frac{1}{\gamma}$ (b) $\left(1 - \frac{1}{\gamma}\right)$

(c) $\gamma - 1$ (d) $\left(1 - \frac{1}{\gamma^2}\right)$

20. The maximum displacement of the particle executing SHM is 1 cm and the maximum acceleration is $(1.57)^2$ cm/s^2. Its time period is

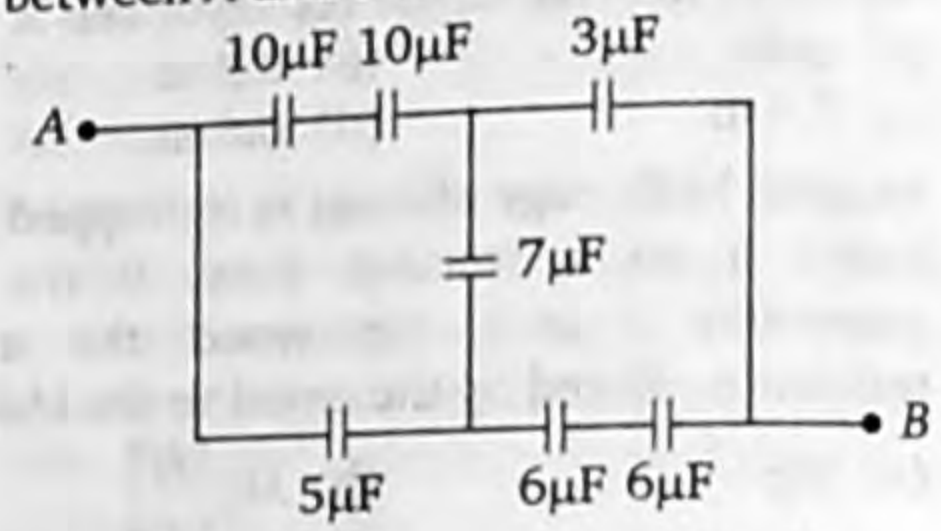
(a) 0.25 s (b) 4.0 s

(c) 1.57 s (d) 3.14 s

21. The equation of a wave travelling on a string is $y = 4 \sin\left[\frac{\pi}{2}\left(8t - \frac{x}{8}\right)\right]$, where x, y are in cm and t in second. The velocity of the wave is

(a) 64 cm/s, in $-x$ direction
(b) 32 cm/s, in $-x$ direction
(c) 32 cm/s, in $+x$ direction
(d) 64 cm/s, in $+x$ direction

22. In the figure, the equivalent capacitance between A and B is



(a) 3.75 μF (b) 5.25 μF

(c) 6.5 μF (d) 10.5 μF

23. Two bulbs 100 W, 250 V and 200 W, 250 V are connected in parallel across a 500 V line. Then

(a) 100 W bulb will be fused
(b) 200 W bulb will be fused
(c) both bulbs will be fused
(d) no bulb will be fused

24. A long solenoid has 20 turns/cm. The current necessary to produce a magnetic field of 20 mT inside the solenoid is approximately

(a) 1 A (b) 2 A

(c) 4 A (d) 8 A

25. The inductance of a coil is proportional to

(a) its length
(b) the number of turns
(c) the resistance of the coil
(d) the square of the number of turns

26. A photosensitive surface is receiving light of wavelength 5000 Å at the rate of 10^{-7} J/s. The number of photons ejected per second is

(a) 2.5×10^{12} (b) 2.5×10^{11}

(c) 2.5×10^{10} (d) 2.5×10^{9}

27. Two discs have same mass and same thickness. Their materials are of densities ρ_1 and ρ_2. The ratio of their moments of inertia about central axis will be

(a) $\rho_1\rho_2 : 1$ (b) $1 : \rho_1\rho_2$

(c) $\rho_1 : \rho_2$ (d) $\rho_2 : \rho_1$

28. The Young's modulus of the material of the wire of length L and radius r is Y N/m^2. If the length is reduced to $L/2$ and radius $r/2$, the Young's modulus will be

(a) $Y/2$ (b) Y

(c) $2Y$ (d) $4Y$

29. A body floats with one-third of its volume outside water and 3/4 of its volume outside another liquid. The density of the other liquid is

(a) $\frac{9}{4}$ g/cc (b) $\frac{4}{0}$ g/cc

(c) $\frac{8}{3}$ g/cc (d) $\frac{3}{8}$ g/cc

30. The terminal velocity of small-sized spherical body of radius r falling vertically in a viscous liquid is given by the following proportionality

(a) $1/r^2$ (b) $1/r$

(c) r (d) r^2

31. The reading of a manometer fitted to a closed tap is 3.5×10^5 N/m^2. If the valve is opened, the reading of the manometer falls to 3×10^5 N/m^2. The velocity of water is

(a) 1 m/s (b) 10 m/s

(c) 100 m/s (d) 0.1 m/s

32. One litre of an ideal gas at 27°C is heated at a constant pressure to 297°C. Then, the final volume is approximately

(a) 1.2 L (b) 1.9 L

(c) 19 L (d) 2.4 L

33. Coefficient of cubical expansion of water is zero at

(a) 0°C (b) 4°C

(c) 15.5°C (d) 100°C

34. A cylindrical conductor is placed near another positively charged conductor. The net charge acquired by the cylindrical conductor will be

(a) positive only

(b) negative only

(c) zero

(d) either positive or negative

35. The ratio of areas between the electron orbits for the first excited state to the ground state for the hydrogen atom is

(a) 2 : 1 (b) 4 : 1

(c) 8 : 1 (d) 16 : 1

36. An electron, accelerated by a potential difference V, has de-Broglie wavelength λ. If the electron is accelerated by a potential difference 4V, its de-Broglie wavelength will be

(a) 2λ (b) 4λ

(c) $\lambda/2$ (d) $\lambda/4$

37. A convex lens of focal length 40 cm is in contact with a concave lens of focal length 25 cm. The power of the combination in dioptre is

(a) – 1.5 (b) – 6.5

(c) + 6.5 (d) + 6.67

38. A material particle with a rest mass m_0 is moving with speed of light c. The de-Broglie wavelength associated is given by

(a) $\frac{h}{m_0 c}$ (b) $\frac{m_0 c}{h}$

(c) zero (d) infinite

39. The impedance of a circuit consists of 3Ω resistance and 4Ω resistance. The power factor of the circuit is

(a) 0.4 (b) 0.6

(c) 0.8 (d) 1.0

40. A glass has refractive index $\frac{3}{2}$ and water has refractive index $\frac{4}{3}$. If the speed of light in glass is 2×10^8 m/s, the speed of light in water in m/s is

(a) 1.5×10^6 (b) 1.78×10^8

(c) 2.25×10^8 (d) 2.67×10^8

41. A bulb is placed between two plane mirrors inclined at an angle of 60°. The number of images formed is

(a) 5 (b) 6

(c) 4 (d) 3

42. A piece of semiconductor is connected in series in an electric circuit. On increasing the temperature, the current in the circuit will

(a) decrease (b) remain unchanged

(c) increase (d) stop flowing

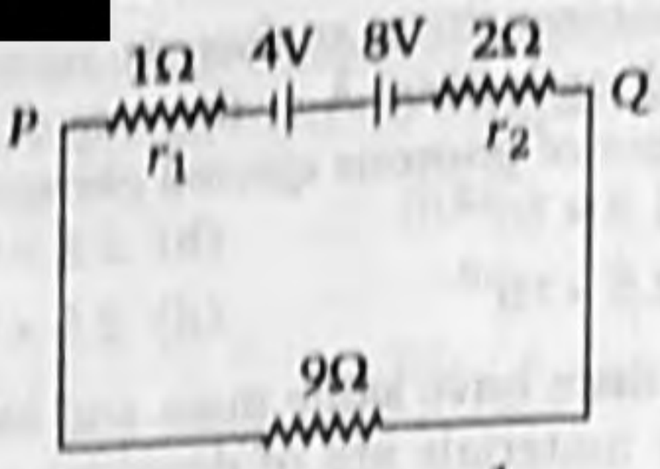
43. If the wavelength of the first line of the Balmer series of hydrogen is 6561 Å, the wavelength of the second line of the series should be
(a) 13122 Å
(b) 3280 Å
(c) 4860 Å
(d) 2187 Å

44. Activity of a radioactive element decreased to one third of original activity R_0 in 9 yr. After further 9 yr, its activity will be
(a) R_0 (b) $\frac{2}{3}R_0$
(c) $\frac{R_0}{9}$ (d) $\frac{R_0}{6}$

45. In a potentiometer experiment, the galvanometer shows no deflection when a cell is connected across 60 cm of the potentiometer wire. If the cell is shunted by a resistance of 6 Ω, the balance is obtained across 50 cm of the wire. The internal resistance of the cell is
(a) 0.5 Ω (b) 0.6 Ω
(c) 1.2 Ω (d) 1.5 Ω

46. A nuclear reaction given by
${}_zX^A \longrightarrow {}_{z+1}Y^A + {}_{-1}e^0 + \bar{\nu}$ represents.
(a) γ-decay
(b) fusion
(c) fission
(d) β-decay

47. Two batteries of emf 4 V and 8 V with internal resistance 1 Ω and 2 Ω are connected in a circuit with a resistance of 9 Ω as shown in figure. The current and potential difference between the points P and Q are



(a) $\frac{1}{3}$ A and 3 V (b) $\frac{1}{6}$ A and 4 V
(c) $\frac{1}{9}$ A and 9 V (d) $\frac{1}{2}$ A and 12 V

48. Light of wavelength 4000 Å is incident on a sodium surface for which the threshold wavelength of photoelectron is 5420 Å. The work function of sodium is
(a) 4.58 eV (b) 2.28 eV
(c) 1.14 eV (d) 0.57 eV

49. In a Young's double slit experiment, the slit separation is 1 mm and the screen in 1 m from the slit. For a monochromatic light of wavelength 500 nm, the distance of 3rd minima from central maxima is
(a) 0.50 mm (b) 1.25 mm
(c) 1.50 mm (d) 1.75 mm

50. In order to double the frequency of the fundamental note emitted by a stretched string, the length is reduced to $\frac{3}{4}$th of the original length and the tension is changed. The factor by which the tension is to be changed, is
(a) $\frac{3}{8}$ (b) $\frac{2}{3}$
(c) $\frac{8}{9}$ (d) $\frac{9}{4}$

Chemistry

1. In a given atom no two electrons can have the same values for all the four quantum numbers. This is called
(a) Hund's rule
(b) Aufbau's principle
(c) Uncertainty principle
(d) Pauli's exclusion principle

2. For reaction, $2NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$, K_c at 427°C is 3×10^{-6} L mol^{-1}. The value of K_p is nearly
(a) 7.5×10^{-5} (b) 2.5×10^{-5}
(c) 2.5×10^{-4} (d) 1.72×10^{-4}

3. What is the order of a reaction which has a rate expression, rate = $k\,(A)^{3/2}(B)^{-1}$?
(a) 3/2 (b) 1/2
(c) 0 (d) None of these

4. Which of th following compounds is highest covalent ?
(a) LiCl (b) LiF
(c) LiBr (d) LiI

5. Shape of XeF_4 molecule is
(a) linear (b) pyramidal
(c) tetrahedral (d) square planar

6. Which one of the following elements has the highest ionisation energy ?
(a) $[Ne]3s^2 3p^1$ (b) $[Ne]3s^2 3p^2$
(c) $[Ne]3s^2 3p^3$ (d) $[Ar]3d^{10}, 4s^2 4p^2$

7. Important ore of zinc is
(a) calamine (b) cryolite
(c) cassiterite (d) malachite

8. Nessler's reagent is
(a) $KHgI_4$ (b) $K_2HgI_4 + NH_4OH$
(c) $K_2HgI_4 + KOH$ (d) $KHgI_4 + NH_4OH$

9. Potassium is kept in
(a) alcohol (b) water
(c) kerosene (d) liquid ammonia

10. Which of the following oxides of nitrogen is the anhydride of nitrous acid ?
(a) NO (b) N_2O_3
(c) N_2O_4 (d) N_2O_5

11. Which one of the given below is a pseudohalide ?
(a) CN^- (b) ICl
(c) IF_5 (d) I_3^-

12. Acidified potassium permanganate solution is decolourised by
(a) bleaching powder (b) white vitriol
(c) Mohr's salt (d) microcosmic salt

13. The pressure and temperature of 4 dm^3 of carbon dioxide gas are doubled. Then, volume of carbon dioxide gas would be
(a) 2 dm^3 (b) 3 dm^3
(c) 4 dm^3 (d) 8 dm^3

14. An fcc unit cell of aluminium contains the equivalent of how many atoms ?
(a) 1 (b) 2
(c) 3 (d) 4

15. Hess's law deals with
(a) changes in heat of reaction
(b) rate of reaction
(c) equilibrium constant
(d) influence of pressure on volume of gas

16. Hydrolysis of sodium acetate will give
(a) acidic solution (b) basic solution
(c) neutral solution (d) normal solution

17. Which of the following is not a non- electrolyte ?
(a) Acetic acid (b) Glucose
(c) Ethanol (d) Urea

18. The oxidation state of S in H_2SO_5 is
(a) + 2 (b) + 4
(c) + 6 (d) + 7

19. Which of the following free radicals is most stable ?
(a) Primary (b) Methyl
(c) Secondary (d) Tertiary

20. Which of the following has highest knocking property ?
(a) Aromatic hydrocarbons
(b) Olefins
(c) Branched chain paraffins
(d) Straight chain paraffins

21. Which of the following is the most stable alkene ?
(a) $R_2C=CR_2$ (b) $RCH=CHR$
(c) $RCH=CH_2$ (d) $CH_2=CH_2$

22. From Williamson's synthesis preparation of which of the following is possible ?
(a) Only symmetrical ethers
(b) Only asymmetrical ethers
(c) Both (a) and (b)
(d) None of the above

23. Dry heating of calcium acetate gives
(a) acetaldehyde (b) ethane
(c) acetic acid (d) acetone

24. Formaldehyde reacts with ammonia to give urotropine that is
(a) $(CH_2)_6 N_4$ (b) $(CH_2)_4 N_3$
(c) $(CH_2)_6 N_6$ (d) $(CH_2)_3 N_3$

25. Aniline reacts with acetaldehyde to form
(a) Schiff's base (b) carbyl amine
(c) immine (d) None of these

26. The reagent which forms crystalline osazone derivative when reacted with glucose, is
(a) Fehling solution (b) phenyl hydrazine
(c) Benedict solution (d) hydroxyl amine

27. Chloramine-T is a
(a) disinfectant (b) antiseptic
(c) analgesic (d) antipyretic

28. Maximum entropy will be in which of the following?
(a) Ice (b) Liquid water
(c) Snow (d) Water vapours

29. Which of the following acts as an oxidising as well as reducing agent?
(a) Na_2O (b) Na_2O_2
(c) $NaNO_3$ (d) $NaNO_2$

30. Maximum number of hydrogen bonds in H_2O is
(a) 1 (b) 2
(c) 3 (d) 4

31. Number of isomers possible for C_4H_8O is
(a) 3 (b) 4
(c) 5 (d) 6

32. The ability of a given substance to assume two or more crystalline structure is called
(a) amorphism (b) isomorphism
(c) polymorphism (d) isomerism

33. A cricket ball of 0.5 kg is moving with a velocity of 100 m/s. The wavelength associated with its motion is
(a) 1/100 cm (b) 6.6×10^{-34} m
(c) 1.32×10^{-35} m (d) 6.6×10^{-28} m

34. At 90°C, pure water has H_3O^+ ion concentration of 10^{-6} mol / L. The K_w at 90°C is
(a) 10^{-6} (b) 10^{-14}
(c) 10^{-12} (d) 10^{-8}

35. Aspirin is chemically
(a) methyl benzoate
(b) ethyl salicylate
(c) acetyl salicylic acid
(d) *o*-hydroxy benzoic acid

36. Synthetic polymer which resembles natural rubber, is
(a) neoprene (b) chloroprene
(c) glyptal (d) nylon

37. The reduction of which of the following compounds would yield secondary amine?
(a) Alkyl nitrile
(b) Carbylamine
(c) Primary amine
(d) Secondary nitro compound

38. Which of the following aldehydes is most reactive?
(a) C_6H_5-CHO
(b) CH_3CHO
(c) HCHO
(d) All the equally reactive

39. Which of the following is dihydric alcohol?
(a) Glycerol (b) Ethylene glycol
(c) Catechol (d) Resorcinol

40. Ethyl alcohol is heated with conc H_2SO_4. The product formed is
(a) $CH_3-\overset{\overset{O}{\|}}{C}-OC_2H_5$ (b) C_2H_6
(c) C_2H_4 (d) C_2H_2

41. In the first order reaction, the concentration of the reactants is reduced to 25% in one hour. The half life period of the reaction is
(a) 2 h (b) 4 h
(c) 1/2 h (d) 1/4 h

42. The movement of solvent molecules through a semipermeable membrane is called
(a) electrolysis (b) electrophoresis
(c) osmosis (d) cataphoresis

43. Which of the following is a primary halide?
(a) Isopropyl iodide
(b) Secondary butyl iodide
(c) Tertiay butyl bromide
(d) Neohexyl chloride

44. $C_6H_5CH_3 \xrightarrow{CrO_2Cl_2} Z$
In the given sequence Z is
(a) benzaldehyde (b) tolueic acid
(c) phenyl acetic acid (d) benzoic acid

45. In the electrolysis of water, one faraday of electrical energy would evolve
(a) one mole of oxygen
(b) one g atom of oxygen
(c) 8 g of oxygen
(d) 22.4 L of oxygen

46. If the half-life of an isotope X is 10 yr, its decay constant is
(a) 6.932 yr^{-1} (b) 0.6932 yr^{-1}
(c) 0.06932 yr^{-1} (d) 0.006932 yr^{-1}

47. On strong heating sodium bicarbonate changes into
(a) sodium monoxide (b) sodium hydroxide
(c) sodium carbonate (d) sodium peroxide

48. Aluminium reacts with caustic soda to form
(a) aluminium hydroxide
(b) aluminium oxide
(c) sodium meta aluminate
(d) sodium tetra aluminate

49. Iron is dropped in dil. HNO_3, it gives
(a) ferric nitrate
(b) ferric nitrate and NO_2
(c) ferrous nitrate and ammonium nitrate
(d) ferrous nitrate and nitric oxide

50. The chief impurity present in red bauxite is
(a) SiO_2 (b) Fe_2O_3
(c) K_2SO_4 (d) NaF

1. Which one is related to urine concentration in mammals?
   (a) Testosterone hormone
   (b) Antidiuretic hormone
   (c) Oxytocin hormone
   (d) All of the above
2. An enzyme that uses viral RNA as template for the synthesis of DNA is
   (a) RNA polymerase
   (b) reverse transcriptase
   (c) viral nuclease
   (d) RNA replicase
3. The carrier which transfer the electrons in electron transport system
   (a) phytochrome (b) cytochrome
   (c) quantasomes (d) fucoxanthin
4. The source of agar-agar is
   (a) *Chlamydomonas* (b) *Chlorella*
   (c) *Gelidium* (d) *Spirogyra*
5. A term helotism is used for the symbiosis of
   (a) alagae and fungi
   (b) algae and *Cycas*
   (c) algae and bacteria
   (d) *Pinus* and fungi
6. Haploid structure of *Funaria* is
   (a) calyptra (b) protonema
   (c) apophysis (d) operculum
7. In the angiosperm ovule, central cell of the embryo sac, prior to the entry of pollen tube, contains
   (a) single haploid nucleus
   (b) one diploid and one haploid nuclei
   (c) two haploid polar nuclei
   (d) one diploid secondary nucleus
8. Which of the following is not an influence of auxins?
   (a) Apical dominance
   (b) Parthenocarpy
   (c) Tropic movements
   (d) Bolting
9. Mycorrhiza helps in
   (a) nutrition up taking
   (b) food manufacturing
   (c) disease resistance
   (d) disease prevention
10. Amphids are cuticular elevations on ventro tips of *Ascaris*, These are
    (a) tangoreceptors (b) taetoreceptors
    (c) olfactoreceptors (d) chemoreceptors
11. Meiosis in *Dryopteris* takes place during
    (a) gamete formation (b) spore germination
    (c) zygote formation (d) spore formation
12. Which malaria parasite has longest incubation period?
    (a) *Plasmodium vivax* (b) *P. falciparum*
    (c) *P. malariae* (d) *P. ovale*
13. In which group of the following would you place the plants having vascular tissue and lacking seeds?
    (a) Algae (b) Fungi
    (c) Bryophytes (d) Pteridophytes
14. The poisonous fluid present in nematocyst of *Hydra* is
    (a) venom (b) hematin
    (c) toxin (d) hypnotoxin
15. XXY chromosome constitution is represented by
    (a) Down's syndrome
    (b) Turner's syndrome
    (c) Klinefelter's syndrome
    (d) Okazaki syndrome
16. The enzyme responsible for the reduction of molecular nitrogen to the level of ammonia in the leguminous root nodule
    (a) amminase (b) nitrogenase
    (c) nitrate reductase (d) nitrite reductase
17. Centromere is present at one end, the chromosome is
    (a) metacentric (b) excentric
    (c) telocentric (d) apocentric
18. Xenia refers to
    (a) effect of pollen on stem
    (b) effect of pollen on taste of fruit
    (c) effect of pollen on vascular tissue
    (d) effect of pollen on endosperm
19. Elater mechanism of spore dispersal is exhibited by
    (a) *Riccia* (b) *Funaria*
    (c) Liverworts (d) *Marchantia*
20. A chemical fertilizing is produced form
    (a) polar bodies
    (b) middle piece of sperm

(c) acrosome
(d) mature eggs

21. The Indian wild ass is in the category of ..... by wild life protection act of government of India
(a) rare species (b) endangered species
(c) endemic species (d) vulnerable species

22. Which of the following commonly called emergency gland of body?
(a) Thymus (b) Testis
(c) Adrenal (d) Pituitary

23. Insectivorous plants grow in ..... deficient soil
(a) Na (b) N
(c) C (d) O_2

24. Uterine endometrium, epithelial glands and connective tissue are broken in menstrual phase. That is due to
(a) oversecretion of FSH
(b) lack of estrogen
(c) lack of progesterone
(d) over production of progesterone

25. The organelles, which take part in photo respiration are
(a) chloroplast, mitochondria, nucleus
(b) chloroplast, mitochondria, lysosome
(c) mitochondria, chloroplast, peroxisome
(d) mitochondria, lysosome, peroxisome

26. Which of the following is correctly matched pair of a certain plant family and its one example?
(a) Malvaceae — Cotton
(b) Leguminosae—Mango or sunflower
(c) Cucurbitaceae—Orange
(d) Brassicaceae—Wheat

27. Which one of the following is a skull bone?
(a) Coracoid (b) Arytaenoid
(c) Atlas (d) Pterygoid

28. A water fern, which is used as a green manure in rice fields is
(a) *Salvinia* (b) Mucor
(c) *Aspergillus* (d) *Azolla*

29. In which of the following animal, post anal tail is found?
(a) Earthworm (b) Lower invertebrate
(c) Scorpion (d) Snake

30. Apogamy is
(a) reproduction of virus
(b) failure of fusion of gametes
(c) development of bacteria
(d) loss of function of reproduction

31. Which bacteria are utilized in gobar gas plant?
(a) Methanogens
(b) Nitrifying bacteria
(c) Ammonifying bacteria
(d) Denitrifying bacteria

32. In photosynthesis, energy from light reaction to dark reaction is transferred in the form of
(a) ADP (b) ATP
(c) RuBP (d) chlorophyll

33. ELISA is used to detect viruses where the key reagent is
(a) DNA probe
(b) RNAse
(c) alkaline phosphatase
(d) catalase

34. If Henle's loop were absent from mammalian nephron, which of the following is to be expected?
(a) The urine will be more concentrated
(b) The urine will be more dilute
(c) There will be no urine formation
(d) There will be hardly any change in the quality and quantity of urine formed

35. Which one of the following does not act as a neurotransmitter?
(a) Acetylcholine (b) Epinephrine
(c) Norepinephrine (d) Cortisone

36. In which of the following stage, the chromosome is single, thin and like long thread?
(a) Leptotene (b) Zygotene
(c) Pachytene (d) Diakinesis

37. C_4-plants differ from C_3-plants in respect to
(a) number of ATP used
(b) substrate which accept the CO_2 molecules
(c) the final product
(d) Both (a) and (b)

38. Gonads of *Obelia* occur in
(a) on blastocyst
(b) in hydrula stage
(c) radial canals of medusa
(d) bases of tentacles of medusa

39. The functional xylem of dicot tree is
(a) sap wood (b) hard wood
(c) heart wood (d) autumn wood

40. Botanical name of sanjeevani is
(a) *Selaginella chrysocaulos*
(b) *Selaginella bryopteris*
(c) *Selaginella chrysorhizos*
(d) None of the above

41. Elbow joint is
(a) ball and socket (b) hinge joint
(c) pivot joint (d) saddle joint

42. The point in eye of mammals from which optic nerves and blood vessels leaves the eye ball is
(a) yellow spot (b) blind spot
(c) pars optica (d) None of these

43. Cerebral hemispheres of rat are connected by
(a) corpus luteum (b) corpus callosum
(c) corpus albicans (d) corpus spongiosum

44. The nucleolus is the site of formation of
(a) spindle fibres (b) chromosomes
(c) ribosomes (d) peroxisomes

45. Deposition of uric acid crystals within the synovial joint causes
(a) osteorthritis
(b) rheumatoid arthritis
(c) gout
(d) paralysis

46. X-chromosomes of female in a sex-linked inheritance case can be passed on to
(a) only female progeny
(b) only male progeny
(c) only in grand daughter
(d) male and female progeny

47. Leaf in young condition in fern is called
(a) scale leaf (b) sporophyll
(c) circinate ptyxis (d) None of these

48. What is common in photosynthesis and respiration?
(a) Light energy (b) $NADPH_2$
(c) Cytochromes (d) $NADH_4$

49. Smell of urine is due to the
(a) urochrome (b) urinode
(c) urea (d) melanin

50. Sertoli cells are involved in
(a) excretion (b) nutrition of sperms
(c) respiration (d) All of these