Biology Section - I

Straight Objective Type

Biology contains 45 multiple choice questions numbered 1 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. Lysosomes are known as "suicidal bags" because of
   (A) Parasitic activity (B) Presence of food vacuole
   (C) Hydrolytic activity (D) Catalytic activity

2. The oxygen and carbon dioxide crosses the plasma membrane by the process of
   (A) Diffusion (B) Osmosis
   (C) Absorption (D) All of the above

3. A cell without a cell wall is termed as
   (A) Tonoplast (B) Protoplast (C) Symplast (D) None of these

4. The function of the centrosome is
   (A) Formation of spindle fibres (B) Osmoregulation (C) Secretion (D) Protein synthesis

5. Select one which is not true for ribosome
   (A) Attached to Smooth endoplasmic reticulum (B) Attached to Rough endoplasmic reticulum
   (C) Proteins produced by ribosomes can act as enzyme (D) Have role in protein synthesis

6. Which one of these is not a eukaryote?
   (A) Euglena (B) Anabaena (C) Spirogyra (D) Agaricus

7. Different cells have different sizes. Arrange the following cells in an ascending order of their size. Choose the correct option among the followings
   i. Mycoplasma ii. Ostrich eggs iii. Human RBC iv. Bacteria
   (A) i, iv, iii & ii (B) i, ii, iii & iv (C) ii, i, iii & iv (D) iii, ii, i & iv

8. Which of the following statements is not true for plasma membrane?
   (A) It is present in both plant and animal cell
   (B) Lipid is present as a bilayer in it
   (C) Proteins are present integrated as well as loosely associated with the lipid bilayer
   (D) Carbohydrate is never found in it

9. Which of the following statements are true about Endoplasmic Reticulum?
   (A) Smooth Endoplasmic Reticulum makes lipids.
   (B) It is also called the control center of the cell.
   (C) It processes carbohydrates.
   (D) It modifies chemicals that are toxic to the cell.
   (A) (a), (b) and (c) (B) (a), (c) and (d) (C) only (a) and (d) (D) all are correct

Space for Rough Work

10. Plasmodesmata are located in narrow areas of _____.
(A) Cell walls (B) Protoplasm (C) Cellulose (D) Nuclei

11. Condensation of chromosomes occurs in
(A) Prophase I (B) Prophase II (C) Anaphase (D) Metaphase

12. The replication of nuclear DNA occurs in
(A) G_1 phase (B) G_2 phase (C) S phase (D) M phase

13. Tendon and ligament are examples of
(A) connective tissue (B) Epithelial tissue (C) Muscular tissue (D) Nervous tissue

14. Squamous epithelium occurs in inner lining of
(A) Kidney (B) Pancreatic duct (C) Lung alveoli (D) Heart

15. Plasma is the ____ part of the blood after removal of corpuscles.
(A) Solid (B) hard (C) fluid (D) jelly like

16. The study of tissues is known as
(A) Physiology (B) Ecology (C) Histology (D) Anatomy

17. Smooth muscles are
(A) Involuntary, cylindrical ,striated
(B) Voluntary ,spindle shaped, uninucleated
(C) Involuntary, spindle shaped ,non-striated
(D) Voluntary, multinucleated, spindle shaped

18. Match the columns

(A)	Cartilage	(P)	Axolemma
(B)	Bone	(Q)	Sarcolemma
(C)	Muscle fibre	(R)	Chondrocytes
(D)	Neuron	(S)	Osteocytes

(A) A-S,B-R,C-Q,D-P (B) A-R,B-P,C-Q,D-S (C) A-R,B-S,C-Q,D-P (D) A-Q,B-P,C-S,D-R

19. Parenchyma is a type of
(A) Simple tissue (B) Complex tissue (C) Xylem (D) Phloem

20. The husk of the coconut is made up of ?
(A) Collenchyma (B) Sclerenchyma (C) Apical meristem (D) Intercalary meristem

Space for Rough Work

21. Which meristem is present at the base of the leaves or internodes on twigs?
(A) Apical meristem (B) Cambium (C) Intercalary meristem (D) Epidermis

22. Which is not a function of epidermis?
(A) Protection from adverse condition (B) Gaseous exchange
(C) Conduction of water (D)Transpiration

23. If the tip of sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to the presence of
(A) cambium (B) apical meristem (C) lateral meristem (D) intercalary meristem

24. Permanent tissue takes a fixed shape, size and function after its formation. So we call them
(A) Totipotent (B) Differentiated (C) Reticulated (D) cloned

25. Tissues in tendrils of a climber plant and leaf stalk of a plant are examples of which tissue?
(A) Parenchyma (B) Collenchyma (C) Vascular (D) Bark

26. Which of the following is a green house gas?
(A) Nitrogen dioxide (B) Sulphur dioxide (C) Carbon dioxide (D) Carbon monoxide

27. Synthetic material/ chemical which depleted Ozone layer is
(A) CFCs (B) CFLs (C) CO_2 (D) None of above

28. Oxygen is harmful for
(A) ferns (B) Rhizobium (C) chara (D) mango tree

29. Major source of mineral in soil is the
(A) parent rock from which soil is formed (B) plants
(C) animals (D) bacteria

30. Who among the following was associated with chipko movement?
(A) Sundarlal Bahuguna (B) Nanditha Devi (C) Baba Amte (D) All of the above

31. Which of the following was started in 1973 to save the evergreen tropical forest in the Palakkad district of Kerala, India from being flooded by a hydroelectric project?
(A) Chipko Movement (B) Silent Valley Movement
(C) Appiko Movement (D) Jungle Bachao Andola

32. Corbett National park is famous for?
(A) Neel Gai (B) Snakes (C) Rhinoceros (D) Tigers

Space for Rough Work

33. Which of the following organisms is incorrectly paired with its trophic level?
(A) Cyanobacteria-primary producer (B) Honey bee- primary consumer
(C) Zooplankton- primary producer (D) Eagle-teritary consumer

34. Solar radiations heat up
(A) Land faster than the water bodies (B) Land slower than the water bodies
(C) Equally both land and water bodies (D) Neither land nor water bodies

35. Which of the following sets of diseases is caused by bacteria?
(A) Cholera and tetanus (B) Typhoid and smallpox
(C) Tetanus and mumps (D) Herpes and influenza

36. The chemical test that is used for diagnosis of typhoid is:
(A) ELISA-Test (B) ESR – Test (C) PCR – Test (D) Widal-Test

37. The sporozoites that cause infection when a female Anopheles mosquito bites a human being are formed in:
(A) Liver of human (B) RBCs of mosquito
(C) salivary glands of mosquito (D) intestine of human

38. Penicillin is a drug that can
(A) Interfere in the biological pathway of bacteria (B) An antibiotic that can kill bacteria
(C) Both (a) and (b) (D) None of the above

39. You are aware of Polio Eradication Programme in your city. Children are vaccinated because
(A) vaccination kills the polio causing microorganisms (B) prevents the entry of polio causing organism
(C) it creates immunity in the body (D) all the above

40. Consider the following statements.
(a) Leucocytes help in cloting of blood.
(b) Platelet flight diseases
(c) Lymph transport nutrients to the heart
Which of the above are false?
(A) A and B only (B) B and C only (C) All of the above (D) A & C only

Space for Rough Work

41. Itai-itai disease was caused by poisoning of
(A) Cadmium (B) Manganese (C) Mercury (D) Zinc

42. Swollen, spongy and purplish gums that are prone to bleeding are the symptoms of which of the following disease?
(A) Xerophthalmia (B) Beri-beri (C) Scurvy (D) Rickets

43. Black death is seen in which of the following disease?
(A) Malaria (B) Leprosy (C) Rabies (D) Plague

44. Stiffness of the neck, jaw, and other muscles, often accompanied by a sneering, grinning expression are the symptoms of
(A) Diphtheria (B) Tetanus (C) Pertusis (D) Cholera

45. Making anti-viral drugs is more difficult than making anti-bacterial medicines because
(A) viruses make use of host machinery
(B) viruses are on the border line of living and non-living
(C) viruses have very few biochemical mechanisms of their own
(D) viruses have a protein coat

Space for Rough Work

Physics Section - II

Straight Objective Type

Physics contains 45 multiple choice questions numbered 1 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. A rabbit ran for 2 minutes at a speed of 7.5km/h, slept for 56 minutes and again ran for 2 minutes at a speed of 7.5km/h. Find the average speed of rabbit is
   (A) 5km/h (B) 0.5km/h (C) 1km/h (D) 10km/h

2. A body whose speed is constant
   (A) Must be accelerated (B) Might be accelerated
   (C) Has a constant velocity (D) Cannot be accelerated

3. Anand leaves his house at 8:30 A.M for his school. The school is 2km away and classes start at 9:00 A.M. If he walks at a speed of 3km/h for the first kilometre, at what speed should he walk the second kilometer to reach just in time?
   (A) 6km/h (B) 5km/h (C) 3km/h (D) 10km/h

4. A truck travelling at 54km/h is slow down to 36km/h in 10sec. Find the retardation
   (A) $0.5m/s^2$ (B) $-0.5m/s^2$ (C) $2.5m/s^2$ (D) $-2.5m/s^2$

5. The maximum speed of a train is 90km/h. It takes 10 hours to cover a distance of 500km. Find the ratio of its average speed to maximum speed.
   (A) 4:5 (B) 5:4 (C) 9:5 (D) 5:9

6. A particle experiences constant acceleration for 20 seconds after starting from rest. If it travels a distance D_1 in the first 10 seconds and distance D_2 in the next 10 seconds then
   (A) $D_2=D_1$ (B) $D_2=2D_1$ (C) $D_2=3D_1$ (D) $D_2=4D_1$

7. A bullet hits a Sand box with a velocity of 20m/s and penetrates it up to a distance of 6 cm. Find the deceleration of the bullet in the sand box.
   (A) $3333.3m/s^2$ (B) $333.3m/s^2$ (C) $33.3m/s^2$ (D) none of the above

8. An electron moving with a velocity of 5×10^3 m/s enters into a uniform electric field and acquires a uniform acceleration of 10^3 m/s^2 in the direction of initial velocity. How much distance will the electron cover in the time by which its velocity will be doubles?
   (A) 53.7×10^3m (B) 57.3×10^3m (C) 35.7×10^3m (D) 37.5×10^3m

Space for Rough Work

9. A mass of 50kg was moving with a velocity 400m/s. A force of 40000N is applied on the mass and its velocity is reduced to 50m/s after some time. What is the distance travelled by the mass during this period?
(A) 76.5m (B) 98.4m (C) 175m (D) 251.5m

10. A ball of 150g mass moves with 12m/s and bounces back after hitting a wall with 20m/s after a small duration of 0.01 second. What was the force applied on the ball when it hits the wall?
(A) 240N (B) 320N (C) 480N (D) 160N

11. If you apply a net force of 3N on 0.1kg box, what is the acceleration of the box
(A) $2m/s^2$ (B) $30m/s^2$ (C) $10m/s^2$ (D) None of these

12. If a net force of 7N was constantly applied on 400g object at rest, how long will it take to raise its velocity to 80m/s?
(A) 0 s (B) 2.23 s (C) 3.47 s (D) 4.57 s

13. An object of mass 10g is sliding with a constant velocity of 2m/s on a frictionless horizontal table. The force required to keep the object moving with the same velocity is
(A) 0 N (B) 5 N (C) 10 N (D) 20 N

14. A cricket ball of mass 0.20kg is moving with a velocity of 1.2m/s. Find the average force applied by the player if he is able to stop the ball is 0.10s?
(A) 2.4N (B) 0.6N (C) 0.3N (D) 0.9N

15. Two objects of masses of 100g and 200g are moving in along the same line and direction with velocities of 2m/s and 1m/s respectively. They collide and after collision, the first object moves at a velocity of 1.67m/s.Determine the velocity of the second object?
(A) 1.56m/s (B) 1.165m/s (C) 3.67m/s (D) 1.65m/s

16. Action & reaction
(A) Always exist in pairs (B) Are equal in magnitude
(C) Always act in opposite directions (D) All the above are true

17. A person sitting in an open car moving at constant velocity throws a ball vertically up into air. The ball fall
(A) outside the car (B) in the car ahead of the person
(C) in the car to the side of the person (D) exactly in the hand which threw it up

Space for Rough Work

18. There is gravitational force between a mosquito flying in air and the huge earth. Which of the following is correct?
(A) The magnitude of force exerted by the mosquito on the earth is less than that exerted by the earth
(B) The magnitude of force exerted by the earth on the mosquito is larger than that of exerted by the mosquito
(C) Both (A) and (B) above are correct
(D) The force exerted by the mosquito on the earth has the same magnitude as the force exerted by the huge earth on the mosquito

19. If the atmospheric pressure is Pa, then pressure P at depth h below the surface of a liquid of density ρ open to the atmosphere is
(A) P_a - ρgh/2 (B) P_a – ρgh (C) P_a (D) P_a+ ρgh

20. A bullet of mass 20 g enters a sand bag at a speed of 100 m/s and comes to rest in 2 s. The magnitude of average force exerted by the sand bag on the bullet is
(A) 10 N (B) 100N (C) 1 N (D) 1000 N

21. The pressure on a swimmer 20 m below the surface of water at sea level is
(A) 1.0 atm (B) 2.0 atm (C) 2.5 atm (D) 3.0 atm

22. Newton's first law of motion is also known as
(A) Newton's law of gravitation (B) Law of inertia
(C) Aristotle's law of motion (D) Galileo's law of gravitation

23. The height above the surface of the earth at which the value of 'g' become $\frac{1}{4}$ of its value on the surface of earth is (given R = 6400km)
(A) 6400km (B) 3200km (C) 12800km (D) 1600km

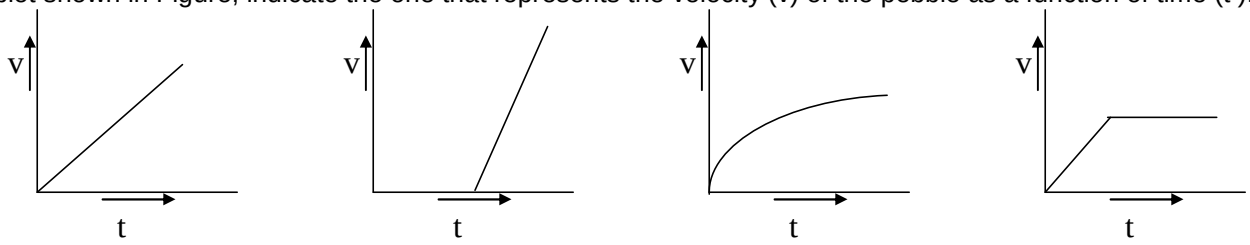
24. 10 one rupee coins are put on top of one another on a table. Each coin has a mass of 10 gm. Find the magnitude of normal reaction of the sixth coin on the seventh coin. (counted from bottom).
(A) 0.1 N (B) 0.2 N (C) 0.3 N (D) 0.4 N

25. When a person is walking on ground
(A) he applies a force on the ground (B) the ground exerts a force on him
(C) No force is applied by the person (D) Both (a) and (b)

Space for Rough Work

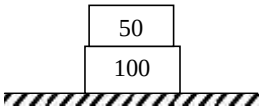
26. The weight of a body is 20 kg. This weight is equal to_____.
(A) 1960 N (B) 196 J (C) 196×10^5 dyne (D) 19.6 N

27. A tall cylinder is filled with viscous oil. A round pebble is dropped from the top with zero initial velocity. From the plot shown in Figure, indicate the one that represents the velocity (v) of the pebble as a function of time (t).



(A) (B) (C) (D)

28. The normal force exerted by the ground surface on the lower block is (g = 10 m/s^2)
(A) 1000 N (B) 500 N
(C) 1500 N (D) 150 N



29. Two spheres of masses 100kg and 200kg are separated by a distance of 50cm. Find the force of attraction between them $\left(G = 6.6 \times 10^{-11} Nm^{-2} kg^{-2}\right)$
(A) $52.8 \times 10^{-7} N$ (B) $58.2 \times 10^{-7} N$ (C) $22.4 \times 10^{-7} N$ (D) $8.4 \times 10^{-7} N$

30. The value of acceleration due to gravity of earth
(A) Same on equator and poles (B) Is the least at equator
(C) Is the least on poles (D) increase from pole to equator

31. The volume of a 350 g sealed tin is 200CC. Find the density of the can in SI unit?
(A) 1750 kg/m^3 (B) 1550 kg/m^3 (C) 1450 kg/m^3 (D) 1850 kg/m^3

32. A crane pulls up a car weighing 500 kg to a vertical height of 4 m. Calculate the work done by the crane? (Given g = 10 m/s^2)
(A) 20 KJ (B) 15 KJ (C) 22 KJ (D) 18 KJ

Space for Rough Work

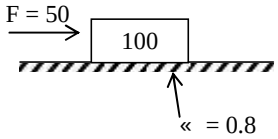
33. A hammer of mass 5 kg hits a surface at a speed of 3 m/s and comes to rest in 0.2 s. The impulse imparted on the hammer has a magnitude of

(A) 75 kg $\frac{m}{s}$ (B) 75 kg $\frac{m}{s^2}$ (C) 15 kg $\frac{m}{s}$ (D) 15 kg $\frac{m}{s^2}$

34. A big stone and small are dropped from the roof of the house at the same time. Which one will reach the ground first?

(A) Big stone (B) small stone
(C) both at the same time (D) not able to determine with the given data

35. The frictional force acting on the block is $\left(g = 10\ m/s^2\right)$



(A) 800 N towards left (B) 800 N towards right
(C) 50 N towards right (D) 50 N towards left

36. The weight of the body at a certain place is 30 N. The acceleration due to gravity at that point is 10 m/s^2. Find out the mass and weight of the object at the place where acceleration due to gravity is zero?

(A) 3 kg, 0 N (B) 3 kg, 30 N (C) 3 kg, 3 N (D) None of these

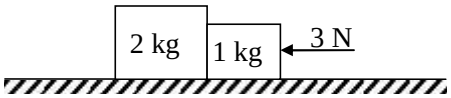
37. An object is thrown vertically upwards and rises to a height of 10 m. Calculate the velocity with which the object was thrown upwards? Take g = 9.8 m/s^2

(A) 14 m/s (B) 16 m/s (C) 10 m/s (D) 9.8 m/s

38. A bullet of mass 15 g has a speed of 400 m/s. The bullet strikes a thick target and is brought to rest in 2 cm.
a. What is its kinetic energy?
b. calculate the average net force acting on the bullet.
c. What happens to kinetic energy originally in the bullet?

(A) a. 1000 J, b. 6×10^5 N, c. converted to heat energy
(B) a. 1200 J, b. 6×10^4 N, c. converted to heat energy
(C) a. 1200 J, b. 5×10^4 N, c. converted to heat energy
(D) a. 1300 J, b. 6×10^5 N, c. converted to potential energy

39. Two blocks of masses 2 kg & 1 kg are in contact with each other on a horizontal frictionless table. When a horizontal force of 3 N is applied to the block of mass 1 kg, the value of the force of contact between the two blocks is



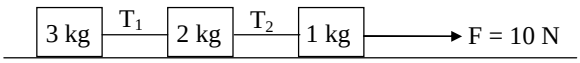
(A) 4 N (B) 3 N (C) 2 N (D) 1 N

Space for Rough Work

40. A solid weighs 50 gf in air (where gf is gram force) and 44 gf when completely immersed in water. Calculate
    a. the upthrust
    b. the volume of the solid
    c. the relative density of the solid
    Given density of water = 1000 kg/m^3.
    (A) a .0698 N, b. 7 cm^3, c. 8.33 gm/ cm^3
    (B) a .0588 N, b. 6 cm^3, c. 8.33 gm/ cm^3
    (C) a .0568 N, b. 5 cm^3, c. 9.33 gm/ cm^3
    (D) a .0588 N, b. 6 cm^3, c. 8.53 gm/ cm^2

41. A horse exert a force of 200 N to pull the cart. If the horse cart system moves with velocity 36 kmh^{-1} on the level road, then find the power of horse in term of horse power (1hp = 746 W)
    (A) 1.68 h.p (B) 2.68 h.p (C) 3.78 h.p (D) 2.28 h.p

42. Three blocks of masses m_1, m_2, m_3 are connected as shown figure find $T_1 : T_2 = ?$ (T_1 & T_2 are the tension in the strings)



    (A) 3 : 5
    (B) 5 : 3
    (C) 3 : 2
    (D) 2 : 3

43. Calculate the kinetic energy of a car of mass 500 kg moving with a velocity of 36 km/h. Find the kinetic energy if the velocity of car doubles?
    (A) 100 KJ (B) 200 KJ (C) 150 KJ (D) 110 KJ

44. The weight of the man on earth is 150 N and on certain planet is 25 N. (Take g = 10 m/s^2 on earth)
    a) Find the mass of the man on planet
    b) Find the acceleration due to gravity on the planet
    (A) a. 15 kg, b. 1.66 m/s^2
    (B) a. 13 kg, b. 1.66 m/s^2
    (C) a. 15 kg, b. 2.66 m/s^2
    (D) a. 14 kg, b. 1.36 m/s^2

45. The pressure exerted by a cube of side 0.03 m on a surface is 10 Pa. Calculate the thrust exerted by the cube?
    (A) 0.007 N (B) 0.009 N (C) 0.010 N (D) 0.005 N

Space for Rough Work

Chemistry Section - III

Straight Objective Type

Chemistry contains 45 multiple choice questions numbered 1 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. On heating liquids, the temperature increases and
   (A) Particles gains energy
   (B) Intermolecular attraction decreases
   (C) Intermolecular spaces between the molecules increases
   (D) All of the above

2. From Brownian motion we can say matter is
   (A) Made up of tiny particles
   (B) Consists of particles moving constantly
   (C) Particles of matter attracts
   (D) All of the above

3. Latent heat of fusion of ice is?
   (A) 80 cal/g (B) 334 J/g (C) 540 cal/g (D) A and B

4. Which of the following has the highest mass?
   (A) 1 g-atom of C
   (B) $\frac{1}{2}$mole of CH_4
   (C) 10 mL of water
   (D) 3.011×10^{23} atoms of oxygen

5. Which of the following is not a heterogeneous mixture?
   (A) Salt + pepper
   (B) Water + sand
   (C) Hydrogen gas + platinum metal
   (D) None

6. Which of the following is amorphous solid?
   (A) Sulphur (B) Rubber (C) A and B (D) None of these

7. 6.022×10^{22} molecules of N_2 at NTP will occupy a volume of
   (A) 22.4 litres (B) 2.24 litres (C) 6.02 litres (D) 6.02 mL

8. Melting is the reverse process of
   (A) vaporization (B) Boiling (C) Freezing (D) None

9. When the liquid starts boiling, the temperature of the liquid
   (A) Increases continuously
   (B) Decreases continuously
   (C) Remains constant
   (D) none

10. Evaporation leads to
    (A) Heating (B) Cooling (C) Unaltered (D) None of these

Space for Rough Work

11. Mercury is used as a thermometric liquid because it has
(A) Lowest latent heat of fusion (B) Lowest specific heat among all the liquids
(C) High specific heat among all the liquids (D) Can't say

12. A sample contains two substances and has uniform properties. The sample is
(A) a compound (B) a heterogeneous mixture
(C) an element (D) a homogeneous mixture

13. A mixture of methyl alcohol and acetone can be separated by
(A) fractional distillation (B) filtration (C) steam distillation (D) sublimation

14. Physical properties of a mixture
(A) Vary with the amount of substance (B) Depend on the volume of the substance
(C) Remain constant irrespective of constituents (D) Vary depending upon its components

15. Compounds
(A) Are the same as mixtures
(B) Can be separated by their physical properties
(C) Contain only one type of element
(D) Are different kind of atoms chemically combined with each other

16. Gold and copper are mixed and used in ornaments. It is an example of
(A) heterogeneous mixture (B) homogeneous mixture
(C) colloid (D) suspension

17. Filtration can be used to separate
(A) solids from solids (B) liquids from solids
(C) liquids from liquids (D) liquids from gases

18. One common method used to separate dyes is
(A) filtration (B) distillation (C) chromatography (D) conductivity

19. Magnetism is most beneficial for separating
(A) gases and non-metallic liquids (B) magnetic solids and solids such as sulfur
(C) non-metallic solids and solids such as sulfur (D) non-magnetic solids from non-magnetic liquids

20. Which of the following substance is not a colloid?
(A) smoke (B) air (C) foam (D) fog

21. The size of solute particles in a colloid is
(A) 10^{-7} to 10^{-5} nm (B) 10^{-7} to 10^{-5} mm (C) 10^{-7} to 10^{-5} cm (D) 10^{-7} to 10^{-5} m

Space for Rough Work

22. Which of the following is a chemical change?
(A) Melting of glass (B) Formation of clouds
(C) Cooking of food (D) Mixing of iron fillings and sand

23. The composition of a constituents can be varied in
(A) molecules (B) mixtures (C) elements (D) none

24. Which of the following has liquid as a dispersed medium?
(A) Fog (B) Shampoo (C) curd (D) Cheese

25. Which is an emulsion?
(A) Boot polish (B) Lipstick (C) Milk (D) All of these

26. X grams of $CaCO_3$ was completely burnt in air. The mass of the solid residue formed is 28grams. What is the value of x in grams
(A) 44 (B) 200 (C) 150 (D) 50

27. Among the following, the group obeys law of multiple proportions
(A) CH_4, CO_2, H_2O (B) N_2O, NO, N_2O_3 (C) $H_2S, CH_4, NaCl$ (D) CO_2, CO, H_2O

28. One litre of a gas at STP weighs 1.16 g. It can possibly be
(A) C_2H_2 (B) CO (C) O_2 (D) CH_4

29. The red pigment in blood contains 0.32% of iron by weight. The molar weight of the pigment is 70,000. The number of iron atoms in each molecule of the pigment is: (Atomic weight of iron is 56g/mole)
(A) 1 (B) 2 (C) 3 (D) 4

30. The total number of protons in 10 gm of calcium carbonate is
(A) 3.0115×10^{24} (B) 1.0507×10^{24} (C) 2.0478×10^{24} (D) 4.096×10^{24}

31. The number of moles of $BaCO_3$ which contains 1.5 moles of oxygen atoms is
(A) 0.5 (B) 1 (C) 3 (D) 6.02×10^{23}

32. If two compounds have the same empirical formula but different molecular formula, they must have
(A) Different percentage composition (B) Different molecular weights
(C) Same viscosity (D) Same vapor density

33. Chemical equation is balanced according to the law of
(A) Multiple proportion (B) Reciprocal proportion
(C) Conservation of mass (D) Definite proportions

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34. 6.022×10^{20} molecules of urea are present in 100 ml of its solution. The concentration of urea solution is
(A) 0.001M (B) 0.1M (C) 0.02M (D) 0.01M

35. Density of a 2.05M solution of acetic acid in water is 1.02g/ml. the molality of the solution is_____ mol/Kg
(A) 1.14 (B) 3.28 (C) 2.28 (D) 0.44

36. The ratio of number of atoms in equal weights of CH_4 and SO_2 is,
(A) 4 : 1 (B) 5 : 3 (C) 20 : 3 (D) 1 : 1

37. 448 ml of an equimolar mixture of nitrogen and an unknown gas (X) weighs 1.28g at STP. The molecular weight of unknown gas (X) is,
(A) 120 (B) 60 (C) 50 (D) 100

38. What weight of NH_3 contains same number of atoms as in 64g of oxygen?
(A) 17g (B) 68g (C) 42g (D) 34g

39. How many of the given are mixtures?
Soil, sugar solution, Na, Fe, Blood, coal, CO_2, CH_4, Air.
(A) 3 (B) 6 (C) 4 (D) 5

40. Colloids are
(A) Heterogeneous, Shows Tyndall effect (B) Homogeneous, shows Tyndall effect
(C) Heterogeneous, does not show Tyndall effect (D) Homogeneous, does not show Tyndall effect

41. Which of the following is a colloid?
(A) sand water (B) Brass (C) lime water (D) Smoke

42. Which of the following is heterogeneous
(i) colloid (ii) True solution (iii) Suspension
(A) Only (i) (B) (i), (ii) (C) Only (iii) (D) (i), (iii)

43. The latent heat of vapourisation of water is?
(A) 80 cal/g (B) 533 cal/g (C) 0.5 cal/g (D) 1 cal/g

44. Which of the following is anisotropic?
(A) Graphite (B) glass (C) Rubber (D) none

45. For the reaction $A + 2B \rightarrow C$, 5 moles of A and 8 moles of B will produce
(A) 5 moles of C (B) 4 moles of C (C) 8 moles of C (D) 13 moles of C

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