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. The network of tube-like structures running through the cytoplasm is called
   (A) Golgi complex (B) mitochondria
   (C) endoplasmic reticulum (D) ribosomes

2. Pathogenic micro-organisms present in host cells are killed by medicines called
   (A) pain killer (B) antibodies (C) antibiotics (D) vaccines

3. Cristae are the modification of the inner membrane of
   (A) Mitochondria (B) Golgibody
   (C) Endoplasmic reticulum (D) Nucleus

4. Which of the following human activities may cause the extinction of species?
   (A) Using animal parts as traditional medicines.
   (B) Encouraging hunting as a sport.
   (C) Using animal parts as decorative pieces.
   (D) All of these

5. Human activities like agriculture, settlements, forestry are allowed in which zone of biosphere reserve?
   (A) Core zone (B) Buffer zone (C) Transition zone (D) Natural zone

6. Which of the following is not an *in situ* conservation?
   (A) Hotspot (B) Biosphere reserves (C) National park (D) Zoo

7. Fallowing is the process of
   (A) Ploughing (B) Irrigating
   (C) Leaving the field empty (D) Sowing

8. Which of the following is a rabi crop
   (A) Wheat (B) Ground nut (C) Maize (D) Sugarcane

9. Wild buffalo is an endangered species because
   (A) its population is diminishing (B) it has become extinct
   (C) it is found exclusively in a particular area (D) its poaching is strictly prohibited

Space for rough work

10. Which one of the following changes may occur due to desertification?
    (A) Decrease in atmospheric temperature. (B) Increase in water holding capacity of soil.
    (C) Increased chances of floods. (D) Conversion of fertile land into a desert.

11. The inner membrane of mitochondria forms crests called
    (A) matrix (B) cristae (C) vesicles (D) cisternae

12. Variously coloured plastids are called
    (A) leucoplasts (B) chloroplasts (C) chromoplasts (D) all of these

13. The two micro-organisms which live in symbiotic association in lichens are
    (A) fungus and protozoa (B) alga and bacteria
    (C) bacteria and protozoa (D) alga and fungus

14. The gas released during the preparation of bread is
    (A) oxygen (B) carbon dioxide (C) nitrogen (D) sulphur dioxide

15. Which disease is not transmitted by mosquitoes?
    (A) Dengue (B) Malaria
    (C) Brain fever or encephalitis (D) Pneumonia

16. Choose the wrong statement
    (A) High blood pressure is caused by excessive weight and lack of exercise.
    (B) Cancers can be caused by genetic abnormalities
    (C) Peptic ulcers are caused by eating acidic food
    (D) Acne in not caused by staphylococci

17. Which one of the following statements is true about a Biosphere Reserve?
    (A) It is a protected area where only endemic species live.
    (B) It is meant only for the conservation of plants and animals.
    (C) It is meant to conserve both, the biodiversity and the culture of that area.
    (D) There are no other protected areas within its limits.

18. The colourless dense sap present inside the nuclear membrane is called
    (A) cytoplasm (B) stroma (C) matrix (D) nucleoplasm

Space for rough work

19. The stretches of DNA which carry information for protein synthesis are called
(A) nucleolus (B) genes (C) centrioles (D) centromere

20. Which one of the following is not a viral disease?
(A) Dengue (B) AIDS (C) Typhoid (D) Influenza

21. The common weed which grows among every crop is
(A) Amaranthus (B) Chenopodium (C) Convolvulus (D) Wild oat

22. Harrow is used to remove
(A) Crop plants (B) Weeds (C) Stones (D) Rocks

23. Gundhi bug is a small insect that attacks
(A) Paddy (B) Wheat (C) Sorghum (D) Cotton

24. The place meant for conservation of biodiversity in their natural habitat are
(i) Zoological garden (ii) Botanical garden
(iii) Wildlife sanctuary (iv) National park
(A) i & ii; (B) ii & iii; (C) iii & iv; (D) i & iv

25. Which one of the following statements is true about endemic species?
(A) They are found exclusively in a specific habitat.
(B) Endemic species can never become endangered.
(C) They are found only in zoos and botanical gardens.
(D) They are not affected by the destruction of their habitat.

26. The tips of the chromosomes are called
(A) centromere (B) genome (C) telomere (D) karyotype

27. Palade discovered
(A) mitochondria (B) Ribosomes (C) grana (D) nucleoplasm

28. Which one of the following is not a bacterial disease?
(A) Cholera (B) Tuberculosis (C) Anthrax (D) Influenza

29. Which one of the following disease is not transmitted by mosquito?
(A) Brain fever (B) Malaria (C) Typhoid (D) Dengue

Space for rough work

30. The practice of growing a cereal crop and the pulse crop alternately in the same field in successive season is called ……..
(A) crop rotation (B) harvesting (C) winnowing (D) threshing

31. ……. Is not used to protect grains from microbes
(A) Neem leaves (B) Turmeric (C) Castor oil (D) Rice powder

32. Which one of the following has a long term effect on the health of an individual?
(A) chewing tobacco (B) chicken pox (C) common cold (D) stress

33. Which statement is incorrect about endangered species?
(A) Their number has decreased drastically.
(B) They might become extinct in the near future.
(C) They pose a danger to other animals.
(D) Their natural habitat needs to be protected.

34. What do black buck, elephant, python and golden cat together represent in a forest?
(A) fauna (B) flora (C) ecosystem (D) species

35. The semipermeable membrane in the plant cell allows the diffusion of
(A) solute molecules (B) solvent molecules
(C) solute and solvent molecules (D) none of these

36. Entry of water into root hairs is an example of
(A) diffusion (B) imbibition (C) osmosis (D) plasmolysis

37. Which one of the following disease is caused by bacteria?
(A) Typhoid (B) Anthrax (C) Tuberculosis (D) All of the above

38. Which one of the following diseases is caused by protozoans?
(A) Malaria (B) Influenza (C) AIDS (D) Cholera

39. …….. is the Rice Bowl of Tamil Nadu
(A) Trichy (B) Tirunelveli (C) Thanjavur (D) Madurai

40. The following is not a tool for ploughing
(A) Pick-axe (B) Hoe (C) Shovel (D) Sickle

Space for rough work

41. The Red Data Book keeps a record of all the
(i) endemic species only (ii) extinct species only
(iii) endangered plants also. (iv) endangered animals also.
(A) ii & iii; (B) i & ii; (C) iii & iv (D) ii & iv.

42. Migratory birds fly to far away areas during a particular time of a year. Which of the following conditions present in their habitat during that time are responsible for this behaviour?
(i) Unavailability of food. (ii) Extreme weather conditions.
(iii) Over crowding. (iv) Lack of nesting areas.
(A) ii & iii; (B) i & ii; (C) i & iv (D) ii & iv.

43. In our country, large patches of forests are being cleared for cultivation of crops. The environmental impact of such a practice will lead to
(A) soil erosion (B) soil conservation (C) soil pollution (D) soil fertility

44. Gaseous exchange in plants takes place through
(A) epidermal cells (B) stomata (C) stem (D) vascular tissue

45. When a cell is placed in strong salt solution, it shrinks because
(A) salt solution enters the cell
(B) cytoplasm of the cell begins to decompose
(C) water comes out of the cell to develop equilibrium
(D) all of these

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. Action – reaction forces
   (A) act on the same body (B) act on different bodies
   (C) act along different lines (D) act in the same direction

2. When a bus suddenly starts, the standing passengers lean back wards in the bus. This is an example of
   (A) Newton's first law (B) Newton's second law
   (C) Newton's third law (D) None of Newton's laws

3. If no force acts on a body, it will.
   (A) get deshaped
   (B) move with increasing speed
   (C) either remain at rest or move in a straight line If already it is in that state.
   (D) break

4. A driver accelerates his car first at the rate of 1.8 m/s^2 and then at the rate of 1.2 m/s^2. The ratio of the forces exerted by the engines will be respectively equal to
   (A) 2:3 (B) 1:2 (C) 2 :1 (D) 3 : 2

5. If you are asked to push an object so that the acceleration produced in it is now twice as before, then the force required will be
   (A) twice as before (B) half as before
   (C) same as before (D) four times as before

6. A scooter of mass 120 kg is moving with uniform velocity of 108 km/hr. The force required to stop the vehicle in 10 s is
   (A) 180 N (B) 360 N (C) 720 N (D) 120 x 10.8 N

7. A body moving with a constant speed on a straight horizontal path doesn't have
   (A) Velocity (B) Momentum (C) Acceleration (D) NONE

Space for rough work

8. Two forces of 75 N and F N acts on a body of mass 2 kg. The acceleration on a smooth surface is $2m/s^2$. The value of F is
   (A) 81 N (B) 79 N (C) 77 N (D) 73 N

9. A ball of mass 1 kg is accelerating at the rate of 1 m/s^2. The rate of change of momentum is
   (A) 1 kg m/s^2 (B) 2 kg m/s^2 (C) 3 kgm/s^2 (D) 4 kg m/s^2

10. A person holds a weight W and jumps from the 2^{nd} floor of a building. During jump, he experiences a weight of
    (A) W (B) 3 W (C) 1.5 W (D) zero

11. A piece of ice is floating in a Jar containing water. When the ice melts, then the level of water:
    (A) rises (B) falls
    (C) remains unchanged (D) rises or falls depending upon the mass of ice.

12. Consider a porter standing on a platform with a suitcase which presses his head with a force of 200 N. Take this force as action. The reaction force is exerted by
    (A) the head on the suitcase (B) the earth on the suitcase
    (C) the earth on the porter (D) the suitable on the earth

13. Pascal is a unit of
    (A) pressure (B) force (C) linear momentum (D) energy

14. The buoyant force on a body acts in a
    (A) vertically downward direction (B) vertically upward direction
    (C) horizontal direction (D) direction between the horizontal and the vertical.

15. A body floats in a liquid if the buoyant force is
    (A) zero (B) greater than its weight
    (C) less than its weight (D) equal to its weight

Space for rough work

16. What will be the ratio of wavelength of two ultrasonic wave having frequency 10^6 Hz. And 1.5×10^6 Hz. Given speed of first wave is twice that of the other.
(A) 1:3 (B) 3:1 (C) 3:2 (D) 2:3

17. Which of the following changes when a wave passes from water into air?
(A) Frequency (B) Wavelength (C) Intensity (D) Both (A) and (C)

18. A man standing between two cliffs hears the first echo of a sound after 2 second and the second echo 3 second after the initial sound. If the speed of sound be 330 m/s, find the distance between two cliffs.
(A) 1650 m. (B) 990 m. (C) 825 m. (D) 660 m.

19. Which of the following remains unchanged when a wave passes from one medium to another?
(A) Speed (B) Wavelength (C) Frequency (D) None of the above

20. Echoes are produced due to:
(A) Reflection (B) Refraction
(C) Resonance (D) All the above are correct

21. The bells of a college or temple are made of large size. It is for:
(A) Producing sound of high-pitch (B) Producing loud sound
(C) Producing sound of high-quality (D) Show

22. The wavelength of sound in air is 10cm. Its frequency is:
(A) 330 cycles per sec. (B) 3.3 kilo cycle per sec.
(C) 30 mega cycle per sec. (D) 3×10^9 Cycle per sec.

23. The speed of sound waves having a frequency of 256 Hz. Compared with the speed of sound wave that has frequency 512 Hz. is:
(A) Half as great (B) The same
(C) Twice as great (D) Four times as great

24. Of the material mentioned below the speed of sound is largest in:
(A) Water (B) Steel (C) Vacuum (D) Air

Space for rough work

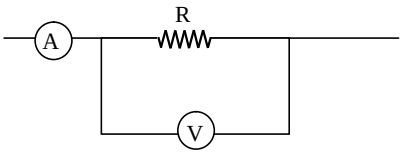
25. Sound waves transfer:
(A) Charge (B) Only energy
(C) Only momentum (D) Both energy and momentum

26. 2 ampere current is flowing through a conductor from a 10volt emf source then resistance of conductor is
(A) 20 Ω (B) 5 Ω (C) 12 Ω (D) 8 Ω

27. 20 coulomb charge is flowing in 0.5 second from a point in an electric circuit then value of electric current in amperes will be
(A) 10 (B) 40 (C) 0.005 (D) 0.05

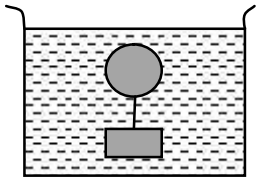
28. A wire of resistance R is cut into ten equal parts which are then joined in parallel. The new resistance is
(A) 0.01 R (B) 0.1 R (C) 10 R (D) 100 R

29. In the circuits shown below the ammeter A reads 4 amp and the voltmeter V reads 20 volts. The value of the resistance R is
(A) slightly more than 5 ohms
(B) slightly less than 5 ohms
(C) exactly 5 ohms
(D) None of the above



30. The number of electrons flowing per second through any cross section of wire, if it carries a current of one ampere, will be
(A) 2.5×10^{18} (B) 6.25×10^{18} (C) 12.5×10^{18} (D) 5×10^{18}

31. A body floats in a liquid contained in a beaker. The whole system shown in figure is falling under gravity. The upthrust on the body due to liquid is
(A) Zero
(B) Equal to weight of liquid displaced
(C) Equal to weight of the body in air
(D) Equal to weight of the immersed body



Space for rough work

32. A boy carries a fish in one hand & a bucket (not full) of water in the other hand. If he places the fish in the bucket, the weight now carried by him (assume that water doesn't spill)
(A) is less than before (B) is more than before
(C) is same (D) depends on his speed

33. A block of wood floats in water with 2/3 of its volume submerged. The density of wood is
(A) 3/2 g/c.c (B) 1/3 g/c.c (C) 1/2 g/c.c (D) 2/3 g/c.c

34. A brass cylinder weighs 90g in air, If the density of brass is 9 g/cc, the weight of the cylinder in water is
(A) 80g (B) 81g (C) 10g (D) 90g

35. A body weighs ' W_1 ' in air & ' W_2 ' in water. The specific gravity of material of the body is
(A) $\frac{W_1}{W_2}$ (B) $\frac{W_1 - W_2}{W_1}$ (C) $\frac{W_1 - W_2}{W_2}$ (D) $\frac{W_1}{W_1 - W_2}$

36. When we change feeble sound to loud sound we increase its
(A) Frequency (B) Amplitude (C) Velocity (D) Wavelength

37. The distance between two consecutive crests in a wave train produced in a string is 5 cm. If 2 complete waves pass through any point per second, the velocity of the wave is
(A) 10 cm/sec (B) 2.5 cm/sec (C) 5 cm/sec (D) 15 cm/sec

38. A tuning fork makes 256 vibrations per second in air. When the velocity of sound is 330 m/s. then wavelength of the tone emitted is
(A) 0.56m (B) 0.89m (C) 1.11m (D) 1.29m

39. Velocity of sound is maximum in
(A) Air (B) Water (C) Vacuum (D) Steel

40. The frequency of a sound wave is n and its velocity is v. If the frequency is increased to 4n, the velocity of the wave will be
(A) v (B) 2v (C) 4v (D) v/4

Space for rough work

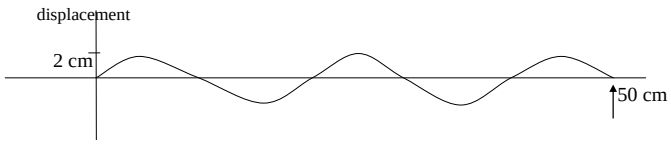
41. A man sets his watch by the sound of a siren placed at a distance 1 km away. If the velocity of sound is 330 m/s
(A) His watch is set 3 sec Faster (B) His watch is set 3 sec Slower
(C) His watch is set correctly (D) None of the above

42. A man is standing between two parallel cliffs and fires a gun. If he hears first and second echoes after 1.5 s and 3.5 s respectively, the distance between the cliffs is (Velocity of sound in air = 340 ms^{-1})
(A) 1190 m (B) 850 m (C) 595 m (D) 510 m

43. A man standing on a cliff claps his hand hears its echo after 1 sec. If sound is being reflected from cliff and velocity of sound in air is 340 m/sec, then the distance between the man and reflection point is
(A) 680 m (B) 340 m (C) 85 m (D) 170 m

44. The frequency of a tuning fork is 384 per second and velocity of sound in air is 352 m/s. How far the sound has traversed while fork completes 36 vibration
(A) 3 m (B) 13 m (C) 23 m (D) 33 m

45. The wavelength of the above wave is
(A) 50 cm (B) 2 cm
(C) 10 cm (D) 20 cm



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. Which of the following is an iron ore?
   (A) Cinnabar (B) Calamine (C) Haematite (D) Rock salt

2. Pick the odd one out
   (A) Water (B) Coal (C) Sun (D) Air

3. Tidal energy is a _____ resource.
   (A) Modern (B) Inexhaustible (C) Non-conventional (D) All of the above

4. What is used in the manufacture of synthetic fibres?
   (A) Natural gas (B) Petrol (C) Petrochemicals (D) Diesel

5. Petrochemicals are obtained from
   (A) Petrol and diesel (B) CNG & LPG (C) Coal & petroleum (D) Carbon dioxide

6. The gas obtained from natural gas & used in the manufacture of fertilizers is
   (A) Nitrogen (B) Hydrogen (C) Oxygen (D) Carbon dioxide

7. Fires are caused in coal mines due to the release of _____.
   (A) Coal gas (B) Methane (C) Hydrogen (D) Carbon monoxide

8. CNG is a better substitute for _____
   (A) Petrol (B) Diesel (C) LPG (D) All the above

9. The anti-knocking agent added to petrol is
   (A) TNT (B) TCM (C) TEL (D) MCM

10. The fuel transported through pipelines and used directly as a fuel in homes & factories is
    (A) LPG (B) Petrol (C) Natural gas (D) Diesel

Space for rough work

11. The fraction of petroleum used in dry cleaning of clothes is
(A) Diesel (B) Kerosene (C) Fuel oil (D) Petrol

12. Petrol is preferred for dry cleaning because it
(A) Can readily burn (B) It highly volatile
(C) is easily available (D) is very light

13. Which fraction of petroleum has lubricating properties?
(A) LPG (B) Gasoline (C) Paraffin wax (D) Diesel

14. Which metal will replace copper from $CuSO_4$ solution?
(A) Zn (B) Fe (C) Mg (D) All of them

15. Arrange the metals A, B and C in order of decreasing reactivity keeping in view the following reactions:

$$A + BSO_4 \longrightarrow ASO_4 + B$$

$$B + 2CNO_3 \longrightarrow B(NO_3)_2 + 2C$$

$$A + C_2O \longrightarrow AO + 2C$$

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

16. Which one of the following is not a noble metal?
(A) Gold (B) Platinum (C) Iron (D) Silver

17. Which is not the characteristic property of gold?
(A) Ductile (B) Highly reactive (C) Malleable (D) None of these

18. Which of the following is not used for making ornament?
(A) Silver (B) Gold (C) Platinum (D) Zinc

19. Which is not the constituent of steel?
(A) Iron (B) Chromium (C) Zinc (D) None of these

20. Which is not the constituent of bronze?
(A) Copper (B) Tin (C) Zinc (D) None of these

Space for rough work

21. Bromine is
(A) A liquid at room temperature (B) A semi-solid at room temperature
(C) A gas at room temperature (D) A solid at room temperature

22. Galvanised iron is protected from rust, because it has a coating of
(A) Hg (B) Sn (C) Cr (D) Zn

23. Coal burns in air to produce
(A) CO_2 (B) N_2 (C) H_2O (D) All of the above

24. Which can absorb over 90% of its own mass of water and does not stick to wound?
(A) Rayon (B) Gun cotton (C) Thiokol (D) Saran

25. Metals have
(A) High melting and high boiling point (B) Low melting and low boiling point
(C) High melting and low boiling point (D) Low melting and high boiling point

26. Buna-S is a synthetic copolymer of
(A) Styrene and 1, 3-butadiene (B) Styrene and ethylene
(C) 1, 3-butadiene and ethylene (D) None of the above

27. The tip of the lead pencil is made of
(A) Lead (B) Graphite (C) Zinc (D) Charcoal

28. Buna-N is a polymer of
(A) 1, 3-butadiene and acrylonitrile (B) Acrylonitrile
(C) Styrene (D) None of the above

29. Sodium hydroxide is also known as
(A) Caustic potash (B) Caustic hydroxide (C) Caustic soda (D) None of these

30. Nylon-6, 6 is a polymer of
(A) Hexamethylene diamine and adipic acid (B) Hexamethylene diamine and sebacic acid
(C) Caprolactam (D) None of the above

Space for rough work

31. The carbon content is mild steel is
(A) 0.1-5.0% (B) 2.0-2.5% (C) 0.05-0.25% (D) Less than 0.1

32. .... is used to harden the rubber for tyre manufacture.
(A) 1, 2-butadiene (B) CaC_2 (C) Wax (D) Carbon black

33. Correct statement is
(A) $ZnCO_3$ is roasted to get ZnO
(B) HgS is roasted to get HgO
(C) ZnS is calcinated to get ZnO
(D) Cu_2S is calcinated to get Cu_2O

34. The weakest interparticle forces are present in
(A) Thermosetting polymers
(B) Thermoplastic polymers
(C) Fibres
(D) Elastomers

35. Which metal is present in heamoglobin?
(A) Zinc (B) Iron (C) Cobalt (D) Nickel

36. The starting materials of PCTFE are
(A) Monochlorotrifluoro ethylene
(B) Tetrafluoroethylene
(C) Vinyl chloride
(D) Styrene

37. Water gas is a mixture of
(A) CO and N_2 (B) CO_2 and H_2 (C) CO and H_2 (D) CO_2 and N_2

38. Cellulose is a condensation polymer of
(A) Maltose (B) β – glucose (C) α – glucose (D) β – fructose

39. Which is an ore of iron?
(A) Haematite (B) Magnetite (C) Both (a) and (b) (D) Galena

40. Which polymer is generally used in carry bags?
(A) Polyester (B) Bakelite (C) Polyethylene (D) Alkyl resin

Space for rough work

41. Limestone on heating gives
(A) Washing soda (B) Plaster of Paris (C) Quicklime (D) Slaked lime

42. Which of the following does not cause pollution?
(A) Burning of rubber (B) Burning of petrol (C) Use of solar energy (D) Coal

43. Teflon is
(A) PTFE (B) PCTFE (C) PVC (D) none of these

44. Efflorescence is shown by
(A) Bleaching powder (B) Baking soda (C) Washing soda (D) Plaster of Paris

45. Which of the following is not a fibre?
(A) Terylene (B) Nylons (C) Polyacrylonitrile (D) Chloroprene

Space for rough work