TOPIC: Skeletal System

1. **What is a human skeleton?**
    - A human skeleton is the internal rigid framework of bones and cartilage that supports, protects, and gives shape to the body.
2. **Name any one example of a flat bone in the body.**
    - Sternum (breastbone), Scapula (shoulder blade), or Skull (cranium).
3. **What is posture?**
    - Posture is the position or position in which someone holds their body while standing, sitting, or lying down.
4. **Apart from a femur, name any other bone that forms the joint at the knee.**
    - Tibia (shinbone) or Patella (kneecap).
5. **What is a joint?**
    - A joint is a point of intersection where two or more bones meet in the body.
6. **Give any one function of joints in the body?**
    - Joints allow movement and flexibility in different body parts.
7. **How is a tendon different from a ligament?**
    - A **tendon** connects a muscle to a bone, whereas a **ligament** connects a bone to another bone.
8. **What immunisable disease affects the bones?**
    - Poliomyelitis (Polio) or Tuberculosis (of the bones/spine).
9. **Apart from protecting delicate body organs, state any other function of the skeletal system.**
    - It gives the body shape and support (or manufacture of blood cells / storage of minerals).
10. **Give any one way of maintaining the proper working of the skeletal system.**
    - Eating a balanced diet rich in calcium and vitamin D (or maintaining proper posture / taking regular exercise).
11. **Name any one mineral salt stored in bones.**
    - Calcium (or Phosphorus).
12. **Name the joint formed by the femur and tibia.**

- Hinge joint (knee joint).

13. **Why are biceps and triceps muscles called antagonistic muscles?**
    - They work in opposing pairs: when one contracts, the other relaxes.
14. **How is a strain different from a sprain?**
    - A **strain** is an injury/overstretching of a muscle or tendon, while a **sprain** is an injury/tearing of a ligament.

Questions 15 and 16 (Chest/Pectoral Girdle Diagram)

15. **Name the bone marked X.**

* Clavicle (collar bone).

16. **What joint is indicated by letter S?**

* Ball and socket joint (shoulder joint).

17. **Apart from the synovial fluid, name any other part that prevents friction in a joint.**
    - Cartilage.
18. **Mention any one example of a hinge joint.**
    - Knee joint (or Elbow joint).
19. **Give any one example of an immovable joint in the body.**
    - Suture joints in the skull (cranium).
20. **Why are cardiac muscles called involuntary muscles?**
    - Because they work automatically without conscious control.
21. **Apart from cardiac muscles, name any other example of an involuntary muscle.**
    - Smooth muscles (found in blood vessels/stomach/intestines).
22. **Give any one deficiency disease of the skeleton.**
    - Rickets.

Questions 23 and 24 (Arm Muscle Diagram)

23. **Name the bone marked S.**

* Ulna (or Radius, the bones of the forearm).

24. **What happens to muscles O when the arm is raised?**

* Muscle O (triceps) relaxes and lengthens.

25. **Which disorder is caused when bones move out of the joint?**
    - Dislocation.
26. **What is a fracture?**
    - A fracture is a break or crack in a bone.
27. **State any one importance of correct body posture.**
    - Prevents muscle strain and spinal deformities (or promotes easy breathing and digestion).
28. **Give any one example of a voluntary muscle.**
    - Biceps muscle (or Triceps / Skeletal muscles).
29. **Mention any one sign of rickets in children.**
    - Bowed legs (or knocked knees / weak bones).
30. **Give any one example of a gliding joint.**
    - Wrist joint (or Ankle joint).

Questions 31 and 32 (Knee Joint Diagram)

31. **Name the movable joint shown in the diagram above.**

* Knee joint (Hinge joint).

32. **Name part marked K.**

* Synovial membrane (or Joint capsule/Synovial capsule).

33. **How is the movement of a hinge joint different from that of a ball and socket joint?**
    - A hinge joint allows movement in **one plane only**, whereas a ball and socket joint allows movement in **all directions (360 degrees)**.
34. **Which part of the skeleton protects the spinal cord?**
    - The vertebral column (spine / backbone).

35. **How do biceps and triceps muscles work in pairs?**
    - When biceps contract to bend the arm, triceps relax; when triceps contract to extend the arm, biceps relax.
36. **What germ causes polio in humans?**
    - Poliovirus (Virus).
37. **Give any one sign of polio in humans.**
    - Weakness or paralysis of the limbs (legs/arms).
38. **How does polio affect the bones?**
    - It damages nerve cells controlling muscles, causing muscle wasting which leaves limbs/bones stunted, weak, or deformed.
39. **Name any one place on the body where a pivot joint is found.**
    - The neck (joint between atlas and axis vertebrae).
40. **Mention any one disorder of the skeletal system.**
    - Bone fracture (or Dislocation / Sprain / Strain).

TOPIC: Circulatory System & Excretory System (Page 2–3)

1. **Apart from transporting materials in the body, state any other function of blood.**
    - Protects the body against infections (white blood cells) or aids in blood clotting (platelets) / helps regulate body temperature.
2. **Mention one disease of blood caused by a virus.**
    - HIV/AIDS (or Hepatitis B/C, Dengue).
3. **State any one way of preventing diseases of the circulatory system.**
    - Doing regular physical exercise (or eating low-fat diets / avoiding smoking).
4. **State any one function of the liver during blood circulation.**
    - Deaminates excess amino acids and detoxifies harmful chemicals before blood circulates further (or regulates blood sugar level).
5. **What blood vessel transports digested food from the ileum to the liver?**
    - Hepatic portal vein.
6. **By what process do materials move out of blood capillaries?**
    - Diffusion (or Ultrafiltration).
7. **What blood vessels transport blood towards the heart?**

- Veins.

8. **Give a reason why blood in veins flows at a low pressure.**
    - Veins carry blood that has passed through narrow capillary networks away from the pumping action of the heart.
9. **What type of blood do most arteries carry?**
    - Oxygenated blood (except the pulmonary artery).
10. **What causes anaemia?**
    - Deficiency of iron/folic acid in diet (or excessive blood loss / malaria infection damaging red blood cells).
11. **Give a reason why white blood cells can't carry oxygen.**
    - They lack hemoglobin.
12. **Apart from AIDS, mention any other disease that affects white blood cells.**
    - Leukemia.
13. **State any one structural difference between white and red blood cells.**
    - Red blood cells have no nucleus and are biconcave, whereas white blood cells have a nucleus and irregular shape.
14. **Mention any one disease of red blood cells.**
    - Sickle cell anaemia (or Malaria).
15. **State any one importance of blood plasma in the body.**
    - Transports dissolved food, urea, hormones, and carbon dioxide.
16. **What is a joint?**
    - A point where two or more bones meet.
17. **Name any one place on the human body where gliding joints are found.**
    - Wrist (carpals) or Ankle (tarsals).
18. **Apart from gliding joints, name any other type of movable joints.**
    - Hinge joint (or Ball and socket joint / Pivot joint).
19. **What is posture?**
    - The carriage/position of the body while sitting, standing, or moving.
20. **How is good posture important during eating of food?**
    - Prevents choking and aids in smooth swallowing and digestion.
21. **How is a tendon different from a ligament?**
    - A tendon joins muscle to bone, while a ligament joins bone to bone.
22. **What accident causes tearing of ligament tissues?**

- Sprain.

23. **Apart from protection and body movement, state any other function of the skeleton.**
    - Production of blood cells in the bone marrow (or storage of minerals like calcium).

Questions 24 and 25 (Pelvic Girdle Diagram)

24. **Name the bone of the skeleton marked X.**

* Pelvis / Pelvic bone (Ilium).

25. **What type of joint is indicated by letter B?**

* Ball and socket joint (hip joint).

26. **What happens to triceps muscles when the arm is straightened?**
    - The triceps contract and shorten.
27. **Apart from calcium, mention any other mineral salt stored in the bones.**
    - Phosphorus.
28. **How is the function of the synovial fluid similar to that of cartilage in a joint?**
    - Both reduce friction between joining bones.
29. **What is a strain?**
    - Overstretching or tearing of a muscle or tendon.
30. **What part of the skeleton protects the spinal cord?**
    - Vertebral column (backbone).
31. **What germ causes poliomyelitis disease in humans?**
    - Virus (Poliovirus).
32. **Give any one sign of poliomyelitis in humans.**
    - Weakness or paralysis of legs/limbs.
33. **Apart from immunization, give any other way poliomyelitis can be prevented in humans.**
    - Proper disposal of human waste / drinking boiled water / maintaining hygiene.

Questions 34 and 35 (Kidney Diagram)

34. **Name part marked R.**

* Renal artery.

35. **State the function of part marked T.**

* Cortex: Filters waste products (urea, salts, water) from the blood.

36. **Apart from filtering blood, state any other function of the kidney in the body.**
    - Regulates water balance (osmoregulation) and salt content in the body.
37. **Name the part of the skin that produces sweat.**
    - Sweat gland.
38. **State any one importance of sweating to the body.**
    - Helps cool the body (temperature regulation) and excretes metabolic wastes.
39. **Give any one process by which sweat is lost from the body.**
    - Evaporation.
40. **How is nitrogen important to plants?**
    - Necessary for the formation of proteins and plant growth.

TOPIC: Electricity and Magnetism

SECTION A

1. **What is electricity?**
    - Electricity is a form of energy resulting from the flow or accumulation of electric charges.
2. **Name the electricity obtained from flowing water.**
    - Hydroelectric power (Hydroelectricity).
3. **Identify any one source of direct current electricity.**
    - Dry cell (battery), solar cell, or accumulator.
4. **Name the electrolyte used in a wet cell.**
    - Dilute sulfuric acid (H_2SO_4).

5. **State any one advantage of secondary cells over primary cells.**
    - Secondary cells can be recharged and reused.
6. **Name the non-metallic conductor found in the dry cell.**
    - Carbon rod (graphite).
7. **If a torch has two dry cells, calculate the total voltage it uses.**
    - Each cell $= 1.5$ V. Total $= 1.5$ V $+ 1.5$ V $= 3.0$ V.
8. **State one difference between conductors and insulators.**
    - Conductors allow electric current to pass through them, while insulators do not.
9. **Why is distilled water not good for drinking?**
    - It lacks essential mineral salts needed by the body.
10. **What are energy resources?**
    - Energy resources are materials or natural phenomena in the environment that can be harnessed to produce useful power/energy.
11. **Show the flow of current in the circuit below.**
    - *(Direction: Draw arrows along the wire pointing from the positive terminal $+$ [longer line] to the negative terminal $-$ [shorter line]).*
12. **How is the work of a fuse different from that of a switch?**
    - A **fuse** automatically breaks the circuit during electrical overload to prevent damage, while a **switch** manually opens or closes a circuit.
13. **What energy change takes place in an electric bulb when in use?**
    - Electrical energy → Heat energy → Light energy.
14. **Why is the filament of an electric bulb coiled?**
    - To offer high resistance to current so it heats up and produces light (and fits a longer wire in a small space).
15. **Define a circuit.**
    - A circuit is a complete closed path through which electric current flows.
16. **Mention any one electrical appliance.**
    - Electric iron (or Flat iron, Television, Electric kettle).
17. **State one importance of electricity.**
    - Provides light / runs domestic appliances / powers industrial machinery.
18. **Give one advantage of using electricity.**
    - It is clean and convenient to use.

19. **How is static electricity different from current electricity?**
    - **Static electricity** involves stationary electric charges, whereas **current electricity** involves charges moving continuously along a conductor.
20. **Name one static electricity in nature.**
    - Lightning.
21. **How does a lightning conductor help to prevent lightning?**
    - It safely conducts electric charges from clouds directly into the ground.
22. **Identify any one danger of lightning.**
    - Causes electrical fires / kills people and animals / damages buildings.
23. **What is magnetism?**
    - Magnetism is the force of attraction or repulsion exerted by magnetic materials.
24. **Define a magnetic material.**
    - A material that can be attracted by a magnet (e.g., iron, steel).
25. **Mention one way solar energy can be obtained in the environment.**
    - Using solar panels (photovoltaic cells) or solar heaters.
26. **Give one way the sun is used as an energy resource.**
    - Drying crops/clothes (or generating solar electricity).
27. **Mention any one example of a renewable energy resource.**
    - Solar energy (or Wind energy, Biomass, Hydro energy).
28. **Why is the earth called a magnet?**
    - Because it acts like a giant bar magnet with magnetic poles and a surrounding magnetic field.
29. **State the main cause of short circuits.**
    - Direct contact between bare live wires and neutral wires (damaged insulation).
30. **What is a magnet?**
    - A piece of material that attracts magnetic substances like iron and steel.
31. **Mention any one example of a natural fiber.**
    - Cotton (or Wool, Silk, Sisal).
32. **Name any one animal used for ploughing.**
    - Ox (Oxen) or Donkey.
33. **What is the source of energy for plants to make starch?**

- Sunlight.

34. **How is heat energy important in rain formation?**
    - It causes evaporation of water from water bodies to form water vapor.
35. **What is a short circuit?**
    - An accidental low-resistance pathway created in a circuit causing excess current flow.
36. **How can the strength of a magnet be increased?**
    - By increasing electric current (in electromagnets) / increasing turns of wire coil.
37. **Mention one property of magnets.**
    - Like poles repel, unlike poles attract (or freely suspended magnets point North-South).
38. **Mention any one example of electrical conductors.**
    - Copper (or Aluminum, Iron).
39. **What is magnetism?**
    - The physical property of attracting magnetic substances.
40. **Mention one way man uses coal as an energy resource.**
    - Burning coal to generate thermal electricity (or heating/cooking).

SECTION B (Electricity & Magnetism)

41. **a) What are energy resources?**
    - Natural sources from which energy can be extracted to do work.

    b) Mention two energy resources from plants.

    - i) Wood / Charcoal
    - ii) Biogas (plant waste) / Biofuels

    c) Suggest any one use of wood to our daily life.

    - Cooking / Heating / Construction material.
42. **a) What is wood conservation?**
    - The wise and sustainable use of wood resources to prevent depletion.

    b) Identify any two ways of conserving wood.

- i) Afforestation / Re-afforestation
- ii) Using energy-saving stoves / alternative fuels (biogas)

c) State one advantage of an energy saving stove.

- Uses less firewood/charcoal, saving trees and money.

43. **a) Identify the energy changes that take place in the following.**
    - i) **Water heater:** Electrical energy → Heat energy
    - ii) **Electric bulb:** Electrical energy → Heat energy → Light energy
    - iii) **Generator:** Mechanical energy → Electrical energy
    - iv) **Motor:** Electrical energy → Mechanical energy
44. **a) Define a fuel.**
    - A fuel is any substance that is burned to produce heat or power.

    b) Mention any two examples of wood fuel.

    - i) Firewood
    - ii) Charcoal

    c) Identify any one example of a fossil fuel.

    - Petroleum (or Coal / Natural gas).
45. **Match items in A with those in B:**
    - i) Thermal energy: **Coal**
    - ii) Nuclear energy: **Uranium**
    - iii) Wind power: **Wind**
    - iv) Solar energy: **Sun**
46. **a) Name the container used for making biogas.**
    - Biogas digester (or Bio-digester).

    b) List down any two materials used in the production of biogas.

    - i) Animal dung / Cow dung
    - ii) Plant waste / Water

    c) Name the gas produced in a biogas digester.

- Methane gas.

Question 47 & 48 (Electromagnetism Diagram)

47. **a) Mention any two methods of making magnets.**

* i) Electrical method (Electromagnetism)

* ii) Stroking method (Single/Double touch)

b) Give any two properties of magnets.

* i) Unlike poles attract; like poles repel.

* ii) Freely suspended magnet rests in the North-South direction.

48. **a) Identify the method of making magnets shown above.**
    - Electrical method (making an electromagnet).

      b) Name pole marked with letter X.

    - North Pole (determined by right-hand grip rule based on current direction).

      c) What happens to the pins at P when the circuit is open?

    - The pins drop off because magnetism is lost.

      d) Give any one way a magnet can lose its magnetism.

    - Heating / Hammering / Dropping repeatedly on a hard surface.
49. **Use the following components to draw a simple electric circuit.**
    - *(Draw a closed loop containing: dry cell symbol, wire conductor, and a bulb symbol).*
50. **a) Identify any two uses of electricity.**
    - i) Lighting homes/streets
    - ii) Running machinery/appliances

b) Give two advantages of using electricity.

- i) Convenient and easy to control with a switch
- ii) Does not produce smoke/clean energy at point of use

51. **a) Name the property of magnetism drawn above.**
    - Magnetic attraction / Magnetic field lines between opposite poles.

    b) Name pole marked with letter X.

    - North Pole (since it attracts South Pole 'S').

    c) Give any one example of a natural magnet.

    - Lodestone (Magnetite).

    d) Identify any one appliance that uses magnets.

    - Loudspeaker (or Electric bell, Compass, Dynamo).
52. **a) Suggest any two importance of solar energy in the environment.**
    - i) Powers photosynthesis in green plants
    - ii) Drives the water cycle through evaporation

    b) Why is a solar panel painted with black?

    - Black surfaces are good absorbers of heat/light energy.

    c) Name the type of energy possessed by flowing water.

    - Kinetic energy.
53. **a) Give two ways man uses energy resources from wind.**
    - i) Generating wind power / electricity via windmills
    - ii) Winnowing crops / Sailing boats

    b) Identify any one way wind is important to plants.

    - Aids in wind pollination / dispersal of seeds.

    c) State the importance of oxygen during seed germination.

- Required for respiration to break down stored food for growth.

TOPIC: Energy Resources in the Environment (SECTION A)

1. **What do we call the ability to do work?**
   - Energy.
2. **What is an energy resource?**
   - A natural feature or material used to obtain useful energy.
3. **Mention any one example of energy resource in the environment.**
   - Sun (or Wind, Water, Biomass).
4. **How can the sun be used as an energy resource in the environment?**
   - Using solar panels to generate electricity (or drying crops/clothes).
5. **Name the form of electricity obtained from the sun.**
   - Solar electricity.
6. **Apart from hydro electricity, mention any other energy resource from water.**
   - Tidal energy (or Wave energy, Geothermal steam).
7. **What form of electricity is obtained from wind?**
   - Wind power / Wind energy.
8. **What is a fuel?**
   - Any substance burned to release heat or light energy.
9. **Apart from petroleum, mention any other example of a fossil fuel.**
   - Coal (or Natural gas).
10. **State any one danger caused by using petroleum to the environment.**
    - Environmental pollution (air pollution from exhaust fumes, oil spills).
11. **How is the use of solar energy friendly to the environment?**
    - It does not emit harmful greenhouse gases or smoke (clean energy).
12. **What form of energy is obtained from wind?**
    - Kinetic energy.
13. **Which form of fuel is obtained from plants and used directly?**
    - Firewood (Wood fuel).
14. **Name the form of wood fuel obtained from burning wood under the limited supply of oxygen.**
    - Charcoal.

15. **State any one danger of using wood fuel to the environment.**
    - Deforestation (leading to soil erosion and climate change).
16. **What does conservation of resources mean?**
    - The protection, preservation, and wise management of natural resources.
17. **State any one way of conserving wood fuel in the environment.**
    - Using energy-conserving charcoal/firewood stoves (or using alternative fuels like biogas).
18. **State any one danger created by charcoal burning to the environment.**
    - Loss of tree cover/deforestation.
19. **Mention any one animal kept for purposes of ploughing.**
    - Ox (Oxen).
20. **Give any one way of conserving non-renewable resources.**
    - Recycling materials (or using renewable alternatives like solar power).
21. **State any one importance of wind energy to people.**
    - Drives windmills to pump water / generates electricity.
22. **How does an energy saving stove help to conserve the environment?**
    - It consumes very little fuel, reducing tree cutting.
23. **State any one advantage of using energy from water over fossil fuels.**
    - Water energy is renewable and non-polluting.
24. **Which form of electricity is obtained from burning fossil fuels?**
    - Thermal electricity.
25. **Apart from wood, name any other substance that stores chemical energy.**
    - Food (or Batteries, Petroleum).
26. **What form of electricity is obtained from the burning of uranium?**
    - Nuclear energy / Nuclear electricity.
27. **How is the use of biogas friendly to the environment?**
    - Reduces reliance on wood fuel and utilizes waste products safely without harmful emissions.
28. **What form of energy enables cars to move?**
    - Chemical energy (converted into Kinetic energy).
29. **Name any one animal material used in the making of biogas.**
    - Cow dung (or Animal manure).

30. **Mention any one example of a non-renewable energy resource.**
    - Crude oil / Petroleum (or Coal).
31. **What causes wind?**
    - Differences in atmospheric pressure due to unequal heating of air by the sun.
32. **Apart from carbohydrates, which other class of food provides the body with energy?**
    - Fats and Oils (Lipids).
33. **Mention any one example of a renewable energy resource.**
    - Sunlight (or Wind, Biomass).
34. **Why is a wind mill put in an area without plants and buildings?**
    - To receive unobstructed, strong wind currents.
35. **Name the container used in the production of biogas.**
    - Digester / Bio-digester.
36. **Why is the inside of a solar drier painted with black?**
    - To maximize heat absorption from sunlight.
37. **Why are solar panels painted black?**
    - Black color absorbs solar radiation efficiently.
38. **How can wind be used to generate electricity?**
    - Wind rotates the blades of a wind turbine, which spins a generator to produce electricity.
39. **What energy resource helps in sailing boats on water?**
    - Wind energy.
40. **State any one importance of a solar drier in a home.**
    - Dries food crops quickly and hygienically while preserving them.

TOPIC: Simple Machines (Pages 1–5)

1. **What are simple machines?**
    - Simple machines are basic devices with few or no moving parts that make work easier by altering the magnitude or direction of a force.
2. **Give any one way machines make work easy.**
    - By reducing the effort force required / by changing the direction of force / by increasing speed.

3. **In which type of simple machine does a ladder leaning against a wall belong?**
    - Inclined plane (Slope).
4. **What name is given to the turning point of a machine?**
    - Pivot or Fulcrum.
5. **Mention any one example of a wedge.**
    - Axe (or Knife, Chisel, Nail).
6. **Give any one use of wedges at home.**
    - Cutting/splitting firewood (or cutting vegetables/food).
7. **What is friction?**
    - Friction is a force that opposes relative motion between two surfaces in contact.
8. **Give any one way friction is an important force.**
    - Enables walking without slipping (or braking of vehicles / writing on paper).
9. **In which class of levers is a bottle opener?**
    - Second class lever.
10. **Give a reason for your answer in 9 above.**
    - The **load** is positioned between the fulcrum and the effort.

Questions 11 and 12 (Single Fixed Pulley Diagram)

11. **Name the type of pulley shown in the diagram above.**

* Single fixed pulley.

12. **Find the force needed to overcome the load of 50kgf using the above pulley.**

* Effort = Load = 50 kgf (since Mechanical Advantage of single fixed pulley is 1).

13. **Give any one use of screws.**
    - Holding materials tightly together (or lifting heavy loads in screw jacks).
14. **Give any one example of a wheel and axle.**
    - Steering wheel (or Door knob, Screwdriver, Windlass).

15. **Mention any one way of increasing friction.**
    - Making surfaces rougher (or putting treads on tires / applying sand on slippery paths).
16. **State any one negative effect in moving parts of a machine.**
    - Causes wear and tear (or wastes energy as heat).
17. **Give any one example of a screw.**
    - Wood screw (or G-clamp, Screw jack, Bottle cap).

Questions 18–20 (Levers Diagram)

18. **Use an arrow to show the direction of the effort on the above diagram.**

* *(Arrow pointing downward at the handle end P/X).*

19. **At what point X and P will a person hold in order to use less force?**

* Point P.

20. **Give a reason for your answer in 19 above.**

* Point P is farther from the fulcrum, creating a longer effort arm which requires less force.

21. **What is an inclined plane?**
    - A sloping surface used to raise heavy bodies with less effort.
22. **Give any one way inclined planes make work easy.**
    - They reduce the effort needed to raise heavy loads to a higher level.
23. **Which simple machine is used for raising flags at school?**
    - Single fixed pulley.

Questions 24–26 (Single Movable Pulley Diagram)

24. **Name the type of pulley shown in the diagram.**

* Single movable pulley.

25. **Calculate the force needed to overcome the load of 100Kgf using the above pulley.**

* Effort $= \frac{\text{Load}}{2} = \frac{100 \text{ kgf}}{2} = 50$ kgf.

26. **Use an arrow to show the direction of the load on the above diagram.**

* *(Arrow pointing downwards from the load of 100kgf).*

27. **Why do birds have streamlined bodies?**
    - To reduce air resistance (friction) during flight.
28. **In which class of levers is a fishing rod?**
    - Third class lever.

Questions 29 and 30 (See-Saw Balance Diagram)

29. **Name part marked M.**

* Fulcrum (Pivot).

30. **Calculate the weight at X required for the see saw to balance.**

* Load × Load Distance = Effort × Effort Distance

$$50 \text{ kgf} \times 4 \text{ m} = X \times 5 \text{ m}$$
$$200 = 5X \Longrightarrow X = 40 \text{ kgf}$$

31. **How do single fixed pulleys make work easy?**
    - By changing the direction of the applied force (pulling downwards instead of lifting up).
32. **Mention any one example of a screw.**
    - Screw jack / Wood screw.
33. **Give any one use of wheel and axle in our daily lives.**
    - Drawing water from a well (using a windlass) or steering motor vehicles.

Questions 34–36 (Inclined Plane Diagram)

34. **Name the machine drawn in the diagram above.**

* Inclined plane (Slope).

35. **What distance on the diagram is moved by the load?**

* Vertical height $= 4$ meters (C to B).

36. **Give any one use of the above machine to people.**

* Loading heavy drums or crates onto trucks easily.

37. **Which part of the human body works as a third class lever?**
    - The forearm (elbow joint acts as fulcrum, biceps muscle as effort, and hand load).
38. **What must Mercy do in order to balance with Praise on the see saw?**
    - Mercy (heavier, 40kgf) must move closer to the fulcrum (pivot).
39. **Mention any one force that affects the working of pulleys and slopes.**
    - Friction (or Gravity).
40. **How do machines in second class levers simplify work?**
    - They allow a small effort to lift a large load because the effort arm is longer than the load arm.

TOPIC: Machines and Excretory System

1. **What is friction?**
    - Force that opposes motion between surfaces.
2. **Mention any one way in which friction is a nuisance force.**
    - Causes wear and tear in machine parts (or causes unwanted heat generation).
3. **How does oiling help to reduce friction in the moving parts of a machine?**
    - Creates a smooth layer between moving surfaces to prevent direct contact.
4. **Apart from oil, mention any other example of a lubricant.**
    - Grease (or Graphite).

5. **Why is a hoe called a simple machine?**
    - It has few parts and helps to simplify digging/cultivation.
6. **What is a lever?**
    - A rigid bar that turns around a fixed point (fulcrum) to overcome a load.
7. **In which class of levers is a pair of tongs?**
    - Third class lever.
8. **Mention any one example of an inclined plane.**
    - Ramp / Staircase / Ladder leaning on a wall.
9. **State any one use of inclined planes to people.**
    - Enables wheeling heavy loads onto high platforms easily.

Questions 10 and 11 (Wedges Diagram)

10. **Name the type of simple machine drawn in the diagram above.**

* Wedge.

11. **Give a reason why it is easier to use machine Y than machine X.**

* Machine Y is thinner and sharper, requiring less effort force to split wood.

12. **How does the skin help to regulate body temperature?**
    - By producing sweat (cooling through evaporation) and regulating blood flow through vasodilation/vasoconstriction.
13. **Mention any one waste removed from the body by the kidneys.**
    - Urea (or Uric acid, excess salts, water).
14. **Give a reason why wastes should be removed from the body.**
    - Wastes are toxic and cause poisoning/disease if allowed to accumulate.
15. **Mention any one habit that affects the proper working of the kidneys.**
    - Excessive alcohol consumption / inadequate water intake / holding urine for too long.
16. **Apart from removing wastes from the body, state any other function of the skin.**

- Protection against germ invasion / regulation of body temperature / synthesis of vitamin D.

17. **Mention any one fungal disease of the skin.**
    - Ringworm (or Athlete's foot).
18. **What is excretion?**
    - The process of removing metabolic waste products from the body.
19. **Mention any one excretory organ.**
    - Kidney (or Skin, Lungs, Liver).

Questions 20–22 (Kidney Internal Diagram)

20. **Name part marked Y.**

* Pelvis (Renal pelvis).

21. **State the function of part W.**

* Cortex: Ultrafiltration of blood to form urine.

22. **How is the function of blood vessel M different from that of P?**

* Vessel **M** (Renal artery) carries oxygenated blood rich in wastes into the kidney, whereas **P** (Renal vein) carries deoxygenated blood freed of wastes away from the kidney.

23. **Mention any one example of a wheel and axle.**
    - Screwdriver / Car steering wheel.
24. **State any one use of wheel and axle to people.**
    - Drawing water from deep wells / turning car wheels.
25. **Name any one wedge used in the kitchen.**
    - Knife.

Questions 26–28 (Pulley Diagram)

26. **Which type of pulley is shown in the diagram?**

* Single fixed pulley.

27. **In which class of levers is the above machine?**

* First class lever (Fulcrum in the center between Effort and Load).

28. **How is the above pulley useful in a school?**

* Used to raise the national/school flag up the flagpole.

29. **Give any one way of increasing friction.**
    - Making surfaces rough (or creating treads/grooves).

Questions 30–32 (Lungs/Respiratory System Diagram)

30. **How is part W kept open all the time?**

* Supported by C-shaped rings of cartilage.

31. **Name part marked Z.**

* Diaphragm.

32. **How is part marked Y adapted to its function?**

* Part Y (Alveoli/Air sacs) has thin walls, high vascularization (many capillaries), and a moist surface for rapid gas exchange.

33. **Apart from carbon dioxide, mention any other waste removed from the body by the lungs.**
    - Water vapor.
34. **Mention any one viral disease of the lungs.**
    - COVID-19 (or Influenza, Measles).
35. **How does sweating help to cool the body?**
    - As sweat evaporates from skin, it absorbs latent heat from the body, lowering skin temperature.
36. **Apart from filtration of blood, state any other function of the kidneys.**
    - Osmoregulation (maintaining water and salt balance).
37. **How is the hair important on the skin?**

- Traps air layers to insulate the body against coldness.

Questions 38–40 (Skin Cross-Section Diagram)

38. **Name part marked S.**

* Erector muscle (Hair erector muscle).

39. **State the function of part marked R.**

* Hair follicle: Anchors hair root and produces hair growth.

40. **Which layer of the skin is marked by letter X?**

* Epidermis.

TOPIC: Light Energy (Summit Primary School)

1. **What is meant by the term light energy?**
   - Light energy is a form of electromagnetic radiation that stimulates the sense of sight.
2. **Mention any one natural source of light.**
   - Sun (or Stars, Fireflies).
3. **Give any one way in which light is useful to people.**
   - Enables clear vision of objects around us.
4. **What do we call the act of testing the fertility of an egg using a candle?**
   - Candling.
5. **How is a beam different from a ray of light?**
   - A **ray** is a single narrow path along which light travels, while a **beam** is a collection of light rays.
6. **How is sunlight energy important to plants during photosynthesis?**
   - Provides energy to react carbon dioxide and water into glucose.
7. **Why is the moon not regarded as a source of light?**
   - It does not produce its own light; it only reflects light from the sun.

Questions 8 and 9 (Diverging Lens Diagram)

8. **Name the type of lens shown in the diagram above.**

* Convex lens (Convex/Converging lens shown converting beam, OR Concave if diverging). *Note: The diagram depicts rays spreading from a point (Diverging beam).* Convex lens brings them together; **Convex lens** corrects long-sightedness.

9. **Why is the above type of lens used to correct long sightedness?**

* It converges light rays so that images focus correctly directly onto the retina instead of behind it.

10. **What name is given to objects that do not allow light to pass through them?**
    - Opaque objects.
11. **Give any one reason why shadows are formed.**
    - Light travels in straight lines and cannot pass through opaque objects.
12. **In the space below, draw a lens used to correct short sightedness.**
    - *(Draw a Concave Lens - thinner in the middle and thicker at the edges)( )*
13. **Mention any one example of a transparent material.**
    - Clear glass (or Clean water, Air).
14. **Which type of beam is shown in the diagram below?**
    - Diverging beam.
15. **What is reflection of light?**
    - The bouncing back of light rays when they strike a reflective surface.
16. **Which type of reflection is caused when the surface is rough?**
    - Diffuse (or Irregular) reflection.
17. **Give any one way of caring for the eyes.**
    - Avoid reading in dim light or direct sunlight (or wash eyes regularly with clean water).
18. **How is reflection of light useful to people?**
    - Enables us to see objects in plane mirrors / used in side mirrors of vehicles for rear vision.
19. **Which type of eclipse is formed when the moon in between the sun and the earth?**

- Solar eclipse (Eclipse of the Sun).

Questions 20–22 (Angle of Reflection Diagram)

20. **Complete the diagram above by showing the reflected ray.**

* *(Draw ray bouncing off O toward Z with an arrow pointing away from surface P).*

21. **If angle b is $40°$, find the size of the angle of reflection.**

* $40°$ (Angle of incidence $=$ Angle of reflection).

22. **Give a reason for your answer in 21 above.**

* The law of reflection states that the angle of incidence equals the angle of reflection ($i = r$).

23. **What is refraction of light?**
    - The bending of light rays as they pass from one transparent medium to another of different density.
24. **Give any one way in which sound is different from light.**
    - Light can travel through a vacuum, whereas sound requires a material medium to travel.
25. **Mention any one characteristic of images formed in plane mirrors.**
    - Virtual (or Laterally inverted / Same size as object / Same distance behind mirror as object in front).

Questions 26–28 (Law of Reflection Diagram)

26. **Which type of reflection is shown in the diagram above?**

* Regular (Specular) reflection.

27. **Name the ray marked X.**

* Incident ray.

28. **Why is ray Z reflected as shown in the diagram above?**

* Because the reflecting surface P is smooth and flat.

29. **What is dispersion of light?**
    - The splitting of white light into its component colors (spectrum).
30. **Apart from being inverted, mention any other characteristic of images formed in a pin hole camera.**
    - Real (or Diminished / Smaller than object).
31. **Why are images formed in a pinhole camera inverted?**
    - Light travels in straight lines, causing rays from the top of the object to cross to the bottom of the screen.

Questions 32–34 (Human Eye Exterior Diagram)

32. **Name part marked L.**

* Sclera (White part of the eye).

33. **State the function of part marked K.**

* Iris: Controls the size of the pupil and regulates light entering the eye.

34. **Mention any one bacterial disease of the eyes.**

* Trachoma (or Bacterial conjunctivitis / Red eye).

35. **Give any one way in which a lens camera is similar to an eye.**
    - Both have a lens to focus light / both have an aperture (pupil) to regulate light / both form real, inverted images.
36. **Why does a ruler placed in water appear broken?**
    - Due to refraction of light as it moves from water to air.
37. **What is meant by the light spectrum?**
    - The band of seven colors produced when white light is dispersed (ROYGBIV).

Questions 38–40 (Eye Diagram)

38. **Name part marked C.**

* Cornea.

39. **State the function of part marked D.**

* Ciliary body / Iris: Adjusts lens shape / regulates pupil size.

40. **Use letter E to show the part where an inverted image is formed.**

* *(Label E on the Retina inner back layer).*

TOPIC: Light Energy and Magnetism

1. **Mention any one example of a magnetic material.**
    - Iron (or Steel, Cobalt, Nickel).
2. **Which method of separating mixtures is used to separate iron filings from rice?**
    - Magnetism (Magnetic separation).
3. **How are magnets useful in hospitals?**
    - Used in MRI machines (or to extract magnetic foreign bodies from eyes/wounds).
4. **What is an eye defect?**
    - An inability of the eye to focus clear images properly on the retina.
5. **What property of magnets does a working compass demonstrate?**
    - A freely suspended magnet points in the North-South direction.
6. **Mention any one method of making natural magnets.**
    - Natural magnets (lodestones) occur naturally in the earth through cooling of iron-bearing magma.
7. **What term is given to the ability of a magnet to pull or push other magnetic material?**
    - Magnetic force.

Questions 8 and 9 (Eye Defect Diagram)

8. **What type of eye defect is shown in the diagram above?**

* Short-sightedness (Myopia) - *light rays focus in front of retina*.

9. **State any one cause of the above eye defect.**

* Eyeball being too long from front to back (or eye lens being too thick/curved).

10. **Apart from the earth, mention any other example of a natural magnet.**
    - Lodestone.
11. **Draw a magnetic field on the magnets drawn below (S-N vs S-N).**
    - *(Draw field lines emerging from North (N) and entering South (S), showing attraction between the middle N and S poles).*
12. **What energy change takes place in a dynamo?**
    - Kinetic (Mechanical) energy → Electrical energy.
13. **What happens to a ray of light when it strikes a plane mirror?**
    - It is reflected back at an angle equal to the incident angle.

Questions 14–16 (Electromagnet Diagram)

14. **Name part marked X.**

* Soft iron core.

15. **Which pole is indicated by letter E?**

* North pole (determined by direction of current flow).

16. **Which energy change takes place in part marked W?**

* Chemical energy → Electrical energy.

17. **How can the strength of an electro magnet be increased?**
    - Increasing current flow / increasing number of turns in wire coil.
18. **What germ causes trachoma?**
    - *Chlamydia trachomatis* (Bacterium).
19. **Which part of the human eye works as the diaphragm of the lens camera?**
    - Iris.
20. **State the function of the retina on the human eye.**

- Acts as light-sensitive screen where images form and converts light impulses into nerve signals.

Questions 21–23 (Periscope Diagram)

21. **Name the optical instrument drawn above.**

* Periscope.

22. **On what principle does the above optical instrument work?**

* Regular reflection of light (using plane mirrors at $45°$).

23. **Mention any one use of the above optical instrument to people.**

* Used in submarines to view objects above water level (or seeing over crowds).

24. **Why does a coin placed in water appear raised?**
    - Due to refraction of light as it moves from water into air.
25. **What is meant by dispersion of light?**
    - Splitting of white light into its constituent colors.
26. **What are translucent materials?**
    - Materials that allow light to pass through them partially, scattering it so objects behind cannot be seen clearly.
27. **Mention any one example of a translucent material.**
    - Frosted glass (or Tracing paper, Oiled paper).
28. **State any one law of light reflection.**
    - The angle of incidence is equal to the angle of reflection ($i = r$) / The incident ray, reflected ray, and normal all lie in the same plane.

Questions 29 and 30 (Electric Bell Diagram)

29. **Name part marked F.**

* Hammer (Striker).

30. **What happens to part E when part D is closed?**

* Part E (Iron core) becomes magnetized and attracts the soft iron armature.

31. **What energy change takes place in an electric bell?**
    - Electrical energy → Magnetic energy → Sound energy.
32. **What is refraction of light?**
    - Bending of light as it passes between media of different optical densities.
33. **What term is given to the natural shadow formed when light from the sun is obstructed by the moon or the earth?**
    - Eclipse.
34. **Mention any one use of plane mirrors to people.**
    - Used as dressing mirrors / in periscopes / side view mirrors.
35. **Why are images formed in a pinhole camera appear inverted?**
    - Light travels in straight lines.
36. **Which part of the human eye prevents internal reflections?**
    - Choroid layer.
37. **What determines the nature of the image formed in a pinhole camera?**
    - The distance of the object from the pinhole camera screen.
38. **Mention any one use of magnets to people.**
    - Navigational compasses / loudspeakers / electrical generators.

Questions 39 and 40 (Magnetizing Diagram)

39. **Which method of making magnets is shown above?**

* Single touch method (Stroking method).

40. **What name is given to magnet labeled X?**

* Permanent magnet (or Steel bar being magnetized).

TOPIC: Section B Structured Questions (Candle, Excretory, Light, Machines)

1. **a) What forms of energy are given off at Q?**
    - i) Light energy

- ii) Heat energy

b) What gas is supporting the process?

- Oxygen.

c) What other process in living things produces the same gas as the candle?

- Photosynthesis (produces oxygen gas).

2. **a) Name the parts marked S and T.**
   - i) **S:** Urinary bladder
   - ii) **T:** Ureter

   b) What is the function of the part marked R?

   - Kidney: Filters blood to produce urine.

   c) Give any one disease that affects the above system.

   - Kidney stones / Bilharzia / Urinary Tract Infection (UTI).
3. **a) What force makes a pencil reduce in length as one writes?**
   - Friction force.

   b) Name any one form of energy produced by the force in (a) above as one writes.

   - Sound energy (or Heat energy).

   c) Give any two disadvantages of the force you have named above to the writer.

   - i) Wastes writing lead/pencil tip quickly.
   - ii) Causes tiredness/fatigue in fingers due to resistance.
4. **a) Name two natural resources in the environment that enable plants to make their food.**
   - i) Sunlight

- ii) Water (or Air / Carbon dioxide)

b) What name is given to the process in (a) above?

- Photosynthesis.

c) Which gas is given off during this process?

- Oxygen gas.

5. **a) Name any one natural and artificial source of light.**
   - i) **Natural:** Sun (or Stars)
   - ii) **Artificial:** Electric bulb (or Torch, Candle)

   b) Why is the moon not regarded as a source of light?

   - It reflects light from the sun instead of emitting its own.

   c) Give any one way in which reflection of light is important to people.

   - Enables rear viewing in motor vehicles using mirrors (or enables vision of non-luminous objects).
6. **a) Name the rays of light marked:**
   - i) **Q:** Parallel rays
   - ii) **S:** Diverging rays

   b) Which type of lens can be used to make light rays move as shown in S above?

   - Concave lens.

   c) Which eye defect can be corrected by a lens which makes rays move as shown in R?

   - Long-sightedness (Hypermetropia) - *R shows converging rays, corrected by convex lens*.
7. **a) Name each of the machines shown in the diagram.**

- i) **A:** Single fixed pulley
- ii) **B:** Inclined plane (Slope)

b) Which of the two machines would you choose to use to lift the load X to a height of 2 metres?

- Machine B (Inclined plane).

c) Give a reason for your answer in (b) above.

- It requires less effort force over a longer distance to lift the heavy load.

8. **a) Name the part marked J.**
   - Sternum (Breastbone).

   b) State any two delicate body organs protected by the part of the skeleton shown.

   - i) Heart
   - ii) Lungs

   c) How is the part of the skeleton shown above used during breathing out?

   - The rib cage moves downwards and inwards to decrease chest volume.
9. **a) Name the layers A and B.**
   - i) **A:** Epidermis
   - ii) **B:** Dermis

   b) State the functions of parts marked Y and Z.

   - i) **Y (Hair shaft):** Traps air layer to regulate temperature / provides sensation.
   - ii) **Z (Sweat gland):** Secretes sweat to excrete wastes and cool the body.
10. **a) Name the parts marked with letters B and C:**
    - i) **B:** Ureter

- ii) **C:** Renal pyramid / Medulla

b) What happens to blood in the part marked with letter D?

- Part D (Cortex): Blood undergoes filtration to remove metabolic wastes.

c) How is part A important to the kidney?

- Part A (Renal artery) supplies oxygenated blood containing waste products to the kidney.

11. **a) Which organ removes urine from the body?**
    - Kidney (or Urethra releases it).

    b) To which body system does the organ that removes urine from the body belong?

    - Excretory system (Urinary system).

    c) Where does urine collect before it is removed from the body?

    - Urinary bladder.

    d) Name one substance found in urine.

    - Urea (or Excess water, Mineral salts, Uric acid).
12. **a) Name the process that takes place in the air sacs.**
    - Gaseous exchange.

    b) What prevents the trachea from closing during breathing?

    - Rings of cartilage.

    c) Give two products found in the air we breathe out.

    - i) Carbon dioxide
    - ii) Water vapor
13. **a) Apart from the skin, give any one other example of a respiratory organ.**

- Lungs.

b) List any two diseases which affect the respiratory organ in humans.

- i) Tuberculosis
- ii) Pneumonia (or Asthma, Bronchitis)

c) Give any one practice by humans which may lead to a respiratory disease.

- Cigarette smoking (or living in polluted/dusty areas).

14. **a) What type of simple machine Z is the man using?**
    - Inclined plane (Ramp/Slope).

    b) Give two examples of the type of simple machine you have named in (a) above.

    - i) Staircase
    - ii) Ladder leaning against a wall

    c) How can the man improve on the machine above in order to make his work easier?

    - Make the slope longer (reduce gradient slope angle) or lubricate the surface/use rollers under the wheelbarrow.
15. **a) Give any two examples of non-renewable resources in the environment.**
    - i) Petroleum (Crude oil)
    - ii) Minerals (Coal / Iron ore)

    b) State any two ways of conserving non-renewable resources.

    - i) Recycling metals and materials
    - ii) Switching to renewable energy sources like solar/wind power

TOPIC: The Excretory System

1. **What is excretion?**
    - The elimination of metabolic waste products from the body.
2. **Give any one reason why wastes should be removed from the body?**
    - To prevent toxicity and cellular damage caused by waste buildup.
3. **Apart from the kidneys, mention any other excretory organ.**
    - Lungs (or Skin, Liver).
4. **Mention any one waste removed from the body by the kidneys.**
    - Urea (or Water, Mineral salts).
5. **State the function of the kidneys during blood circulation.**
    - Filter and clean waste materials from circulating blood.
6. **How is the function of the kidneys similar to that of the skin?**
    - Both excrete excess water, urea, and mineral salts from the body.
7. **Which human body organ balances the amount of water needed in the body?**
    - Kidney.
8. **How does the skin help to maintain body temperature during coldness?**
    - Erector muscles contract to raise hair shafts (trapping warm air) and blood vessels constrict (vasoconstriction) to minimize heat loss.

Questions 9–11 (Kidney Diagram)

9. **Use letter K to show the part of the kidney that filters blood.**

- *(Label K on the Cortex region).*

10. **Name the blood vessel marked by letter M.**
    - Renal vein.
11. **State the function of part marked N.**
    - Ureter: Carries urine from kidney pelvis to the urinary bladder.
12. **How does excessive alcoholism affect the normal working of the kidneys?**
    - It causes dehydration and leads to kidney damage/failure.
13. **State any one excretory waste removed from the body through the skin.**
    - Sweat (containing urea, water, and salt).
14. **Name the outer most layer of the skin.**

- Epidermis (Cornified layer).

15. **Apart from removing wastes, mention one other function of the human skin.**
    - Body temperature regulation (or protection against infection).
16. **State the function of the hair on the skin.**
    - Traps a insulating layer of air to retain body heat.
17. **Apart from producing bile, state any other function of the liver.**
    - Deamination of excess amino acids (or storage of glycogen / detoxification).
18. **Which organ of the body is affected by Hepatitis B?**
    - Liver.
19. **What germ causes ring worm infection in humans?**
    - Fungus.
20. **Give any one sign of ring worm infection in humans.**
    - Ring-shaped, itchy, scaly skin patches.
21. **Mention any one way of preventing ring worm infection in humans.**
    - Maintain personal hygiene / avoid sharing clothes, combs, or towels with infected individuals.
22. **Lungs are both respiratory and excretory organs, give a reason why they are referred to as excretory organs.**
    - Because they eliminate waste carbon dioxide and water vapor produced during cellular metabolism.

Questions 23 and 24 (Lungs Interior Diagram)

23. **Name part marked Z.**

* Diaphragm.

24. **Mention any one disease that affects part marked X.**

* Part X (Alveoli): Pneumonia (or Tuberculosis / Emphysema).

25. **Apart from being in the excretory system, in which other system do the kidneys belong?**

- Urinary system.

26. **Give any one way of maintaining the proper working of the kidneys.**
    - Drink plenty of clean water daily (or avoid alcohol/drug abuse).
27. **Which human body organ regulates body temperature?**
    - Skin (controlled by the hypothalamus in the brain).
28. **Why does a person urinate a lot on a cold day than a sunny day?**
    - Less water is lost through sweating due to cold temperatures, leaving excess water to be excreted via urine.
29. **How does smoking affect the proper functioning of the lungs?**
    - Tar damages cilia and alveoli walls, leading to lung cancer, bronchitis, and reduced gas exchange capacity.

Questions 30–31 (Skin Diagram)

30. **Name part marked B.**

* Erector muscle.

31. **State the function of part marked C.**

* Capillaries: Transport blood, supply nutrients to skin, and help regulate heat loss.

32. **What germ causes leprosy?**
    - *Mycobacterium leprae* (Bacterium).
33. **Give any one way leprosy can be spread from one person to another.**
    - Through prolonged close contact with an untreated person via respiratory droplets.
34. **Mention any one sign of leprosy.**
    - Discolored, numb skin patches / loss of feeling in fingers and toes.
35. **Apart from being spread through air, give any other way Tuberculosis is spread in humans.**
    - Drinking unpasteurized/raw milk from infected cattle.
36. **Give any one sign of Tuberculosis in humans.**
    - Persistent cough lasting over 2–3 weeks (or coughing blood / night sweats / weight loss).

37. **What communicable disease has similar signs as tuberculosis?**
    - HIV/AIDS (or Chronic Bronchitis).

Questions 38–40 (Urinary System Diagram)

38. **How is blood carried in J different from that carried in K?**

* Vessel **J** (Inferior Vena Cava) carries deoxygenated, clean blood from kidneys, while **K** (Aorta) carries oxygenated, waste-rich blood to kidneys.

39. **Name part marked M.**

* Urinary bladder.

40. **How is the function of part marked L different from that of part N?**

* Part **L** (Ureter) carries urine from kidney to bladder, whereas part **N** (Urethra) discharges urine out of the body from the bladder.

TOPIC: Agricultural Practices & Agroforestry (SECTION A)

1. **State any one activity done during hardening off in a nursery bed.**
    - Gradually reducing shade cover or watering frequency to prepare seedlings for field conditions.
2. **What is transplanting?**
    - The transfer of healthy seedlings from a nursery bed to the main garden.
3. **Why should transplanting be done in the evening?**
    - To minimize seedling wilting caused by high transpiration rates during hot sunshine.
4. **How is thinning different from pruning?**
    - **Thinning** is the removal of excess, weak, or overcrowded seedlings from a crop stand, whereas **pruning** is the removal of unwanted branches or old leaves from a single plant.
5. **What is mulching?**

- The practice of covering topsoil with organic material (dry grass, leaves) to conserve moisture and suppress weeds.

6. **State any one advantage of mulching gardens.**
    - Conserves soil moisture (or suppresses weed growth / adds organic humus upon decay).
7. **State any one importance of gap filling.**
    - Replaces dead or failed seeds/seedlings to maintain optimum crop population density.
8. **Which garden tool is used for pruning?**
    - Secateurs (or Pruning saw, Shears).
9. **State any one danger of weeds to crops.**
    - They compete with crops for soil nutrients, water, light, and space.
10. **Mention any one method of controlling weeds in a garden.**
    - Mulching (or Hand weeding, Uprooting, Applying herbicides).
11. **How does mulching help to conserve soil moisture?**
    - Reduces direct heat on soil, preventing water evaporation.
12. **Mention any one pest of pineapples.**
    - Mealybugs (or Pineapple scale insects).
13. **Name any one method of harvesting trees in agro forestry.**
    - Coppicing (or Pollarding, Lopping, Selective felling).
14. **What is a wood lot?**
    - A small dedicated area of land managed for tree growth and timber production.
15. **State any one factor considered when starting a wood lot project.**
    - Availability of land / tree species selected / purpose of wood / market demand.
16. **Give any one advantage of starting a wood lot project.**
    - Provides a sustainable source of firewood/timber and yields income.
17. **Give any one use of wood in the environment.**
    - Construction / fuel / paper making / provides habitat for wildlife.
18. **What are farm records?**
    - Written accounts of all farm operations, inventories, finances, and events over time.
19. **Give any one importance of keeping records on a wood lot project.**

- Helps track project profitability and guides decision making.

20. **Mention any one type of records kept on a crop farm.**
    - Production records (or Financial/Inventory/Labor records).
21. **Mention any one problem faced by a farmer who does not keep records.**
    - Inability to determine whether the farm business is making a profit or loss.
22. **Give any one activity done by young farmers club.**
    - Tree planting / vegetable growing / raising small livestock / agricultural debate.
23. **Mention any one disease of tomatoes.**
    - Tomato blight (Late/Early blight) or Tomato wilt / Blossom end rot.
24. **How do mulches help to control the growth of weeds in a garden?**
    - They block sunlight needed by weed seeds to germinate and grow.

Questions 25 and 26 (Food Chain)

25. **Name the secondary consumer in the above food chain.**

* Hen *(Plants [Producer] → Grasshopper [Primary] → Hen [Secondary] → Eagle [Tertiary] → Bacteria [Decomposer])*.

26. **How important are plants in the above food chain?**

* They are primary producers that convert solar energy into food for herbivores.

27. **How do weeds growing in a garden lower crop yields?**
    - By depriving crops of essential mineral nutrients, water, and sunlight.
28. **State any one importance of staking tomatoes in a garden.**
    - Prevents fruits/leaves from touching dirty soil, reducing fungal disease infection.
29. **How does spacing of crops help them to grow well?**
    - Reduces competition among crops for nutrients, sunlight, and moisture.
30. **Give any one example of a tree species grown in a wood lot.**
    - *Eucalyptus* (or *Pine*, *Markhamia*, *Cypress*).
31. **Give any one way in which soil benefits from bacteria.**

- Nitrogen-fixing bacteria enrich soil with nitrates / Decomposers break down organic matter into humus.

32. **Apart from helping in germination, how else is oxygen important to plants?**
    - Essential for root cellular respiration to release growth energy.

Questions 35 and 36 (Harvesting Trees Diagram)

35. **Which method of harvesting wood is shown in the diagram?**

* Coppicing (cutting tree near base to stimulate new shoots).

36. **State any one advantage of using the above method over selective felling.**

* Allows the tree to regenerate rapidly without needing replanting.

37. **What do we call the practice of growing crops together with trees on the same piece of land?**
    - Agroforestry.
38. **How do plants benefit from the above practice?**
    - Trees provide shade, reduce wind speeds, and add leaf litter that decays into nutrients.
39. **State any one advantage of row planting over broadcasting method of growing crops.**
    - Makes weeding, spraying, harvesting, and spacing maintenance much easier.
40. **State any one danger caused by chemicals sprayed on crops to farmers.**
    - Chemical poisoning / respiratory irritation if inhaled without protective equipment.

TOPIC: Community Health, Diseases & Social Problems (SECTION A)

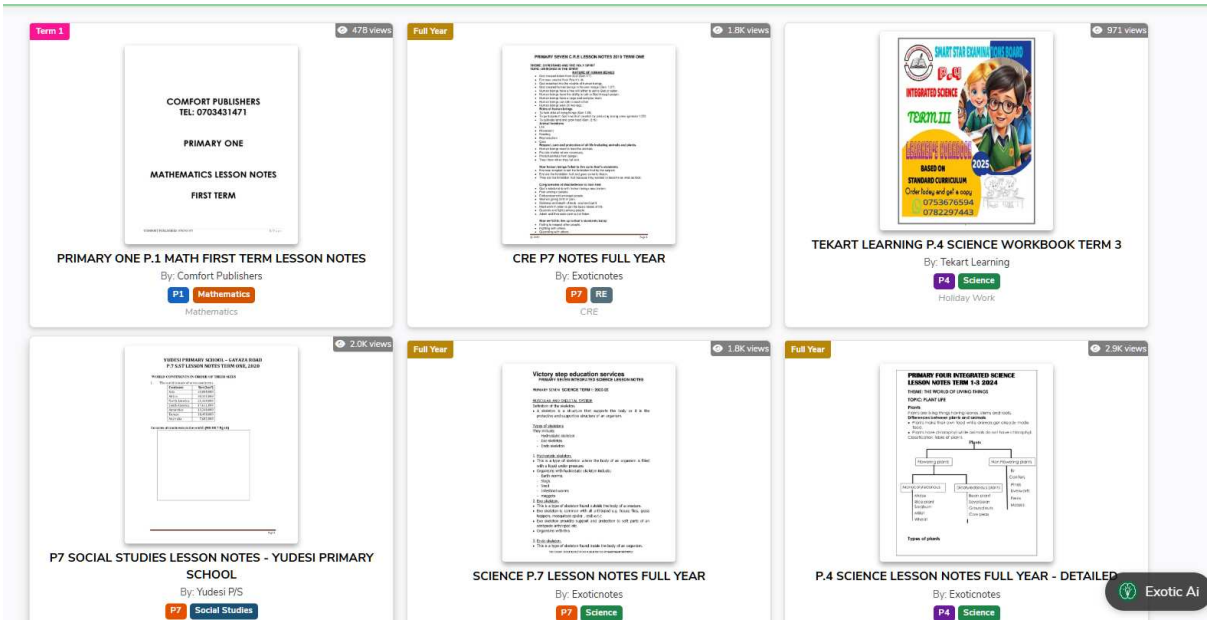
1. **Mention any one social problem in the community.**
    - Poverty / Drug abuse / Crime / Early marriage.
2. **Mention any one type of common sickness in a home.**
    - Malaria / Common cold (Flu) / Diarrhea.

3. **Which immunisable disease affects the liver?**
    - Hepatitis B.
4. **What are deficiency diseases?**
    - Diseases caused by a prolonged lack of essential nutrients in the daily diet.
5. **Give any one cause of malnutrition in adults.**
    - Poverty (inability to afford balanced food) / alcohol abuse / eating disorders.
6. **State any one danger of malnutrition in children.**
    - Stunted growth / impaired brain development / increased susceptibility to infections.
7. **Mention any one sign of malnutrition.**
    - Swollen abdomen and hair color change (Kwashiorkor) or extreme body wasting (Marasmus).
8. **Apart from immunization, give any other way polio can be prevented in a home.**
    - Boiling drinking water / proper pit latrine usage / washing hands before meals.
9. **Name the germ that causes polio.**
    - Virus (Poliovirus).
10. **Apart from tuberculosis, mention any other bacterial immunisable disease.**
    - Tetanus (or Diphtheria, Pertussis/Whooping Cough).
11. **What causes anaemia?**
    - Deficiency of iron in the diet (or severe blood loss / destruction of red blood cells by malaria).
12. **What are communicable diseases?**
    - Infectious diseases capable of spreading from one person or animal to another.
13. **Mention any one communicable disease which is sexually transmitted.**
    - HIV/AIDS (or Syphilis, Gonorrhea).
14. **What are health concerns?**
    - Conditions or issues that threaten the health and well-being of a community.

15. **What are antisocial behaviours?**
    - Actions that violate social norms, cause harm, or disrupt peaceful community living.
16. **Mention any one antisocial behaviour among the youth.**
    - Drug abuse / Vandalism / Bullying / Theft.
17. **Mention any one community health concern.**
    - Improper waste disposal / Poor sanitation / Outbreaks of epidemic diseases.
18. **Mention any one example of a non-communicable disease of the lungs.**
    - Asthma (or Lung cancer, Emphysema).
19. **State any one danger of antisocial behaviour.**
    - Leads to criminal behavior, school dropouts, and community insecurity.
20. **What are sexual deviations?**
    - Unnatural or socially unacceptable sexual practices.
21. **Give any one example of a sexual deviation.**
    - Homosexuality / Bestiality / Incest / Rape.
22. **What are sexually transmitted diseases?**
    - Infections transmitted from person to person through sexual contact.
23. **How can school going children prevent themselves from contracting HIV/AIDS?**
    - Abstaining from sexual activity.
24. **Give any one way of controlling common sicknesses in a home.**
    - Maintaining good hygiene, eating balanced meals, and boiling drinking water.
25. **How does sleeping under a treated mosquito net help to prevent malaria?**
    - Prevents female *Anopheles* mosquitoes from biting people at night.
26. **How does rearing fish in a pond help to prevent the spread of malaria?**
    - Fish feed on mosquito larvae in the water, breaking their breeding cycle.
27. **How is sickle cell anaemia different from anaemia?**
    - **Sickle cell anaemia** is a hereditary genetic disorder causing abnormally crescent-shaped red blood cells, whereas **anaemia** is a general deficiency of red blood cells or hemoglobin (often dietary).

28. **State any one activity that can be done to address health concerns.**
    - Conducting community cleanup campaigns / immunizing children / health education.
29. **Give any one life skill of avoiding social problems in youths.**
    - Assertiveness / Peer pressure resistance / Critical thinking / Decision making.
30. **State any one danger of smoking to a pregnant woman.**
    - Causes low birth weight / premature birth or miscarriage.
31. **State any one danger of smoking to a family.**
    - Causes passive smoking health hazards to family members and wastes financial resources.
32. **What are water borne diseases?**
    - Diseases spread through drinking or using water contaminated by pathogens.
33. **Which water borne disease is caused by amoeba?**
    - Amoebic dysentery.
34. **State any one danger of sharing water sources with animals.**
    - Contaminates water with animal feces, leading to outbreaks of dysentery, cholera, or worm infestation.
35. **State any one danger of sharing houses with domestic animals.**
    - Increases risk of zoonotic disease transmission and parasite infestations (fleas/ticks).
36. **Give any one cause of inadequate food in a home.**
    - Prolonged drought / poverty / poor food storage methods / laziness.
37. **Mention any one way of making water safe for drinking.**
    - Boiling (or Chlorination).
38. **Name any one water habitat vector.**
    - Freshwater snails (or *Anopheles* mosquito larvae).
39. **Mention any one disease spread by water habitat vectors.**
    - Bilharzia (schistosomiasis) — *spread by snails*, or Malaria — *spread by mosquitoes*.
40. **Give any one way of controlling water habitat vectors.**
    - Draining stagnant water pools / spraying larvicides / applying biological control (introducing vector-eating fish).

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