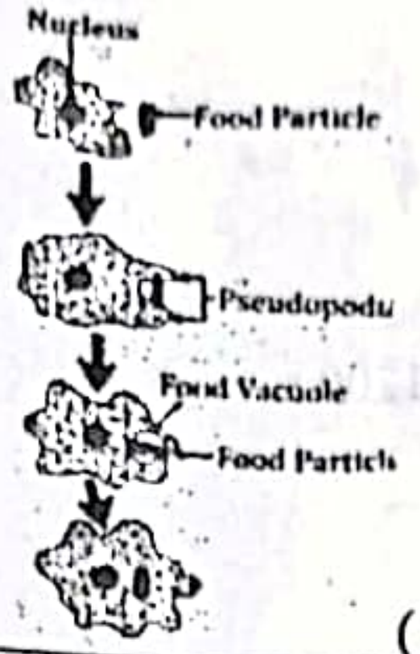
Section – A (1 Marks for each question = 24 marks)

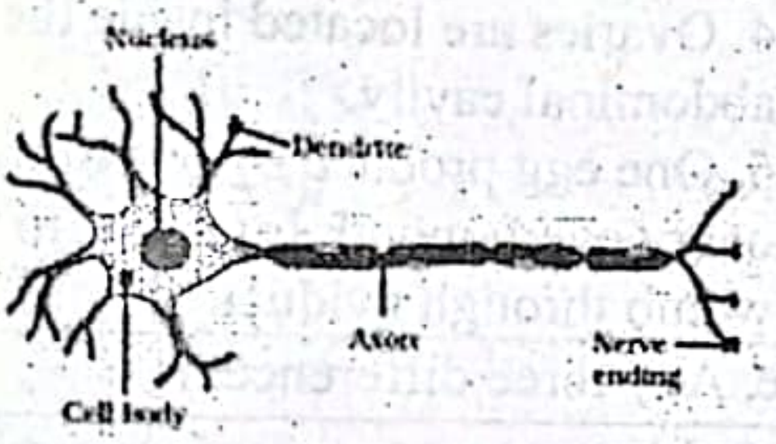
1	(B) The fuel is not burning completely
2	(C) Vanilla
3	(A) 10^{-6}
4	(D) Respiration
5	(A) Cataract
6	(D) Either plain or convex
7	0.02
8	Alessandro Volta
9	Lactic Acid
10	Snail
11	$1/v - 1/u = 1/f$
12	HgS
13	True √
14	False X
15	True √
16	False X
17	Thyroxin
18	Trait B
19	Red
20	The rate of flow of electric charge is called electric current Or Flow of electric charge through area of cross section of conductor in unit time.
21	Cytokinin - (c) Promote cell division
22	Gebberellin - (a) Help in the growth of stem
23	The organism which prepared their own food - (b) Producers
24	The organism which feeds on plants - (a) Herbivores

Section –B (18 Marks)

25	Element X = Copper/Cu. The Black coloured compound formed after heating in air = Copper (II) oxide (CuO)
26	Platinum, gold, and silver are used to make jewellery because they are very lustrous, malleable and ductile. These metals can be given different shapes according to our needs. They are not affected by air ,.water or dilute acid They are very less reactive and do not corrode easily. (Regardless of the number of points, Give marks any form of answer based on key words.)

27	
27	(Only for visually impaired students) (2 Marks) • Amoeba takes in food using temporary finger like extensions of the cell surface pseudopodia • which fuse over the food particle forming a food vacuole.Inside the food vacuole, complex substances are broken down into simpler ones. • These simple substances then diffuses into cytoplasm. • The remaining undigested materials is moved to the surface of the cell and thrown out. (Regardless of the number of points, Give marks any form of answer based on key words.) (2 Marks)
28	a)Asexual reproduction : Budding (1 Mark) b)Hydra (1 Mark)
28	(Only for visually impaired) 28) The four modes of reproduction used by single organisms. binary fission, budding, vegetative propagation, spore formation, and fragmentation (1 Mark any one correct example, any two)
29	The unisexual flowers contain either stamens (Male reproductive organ) or pistils(Female reproductive organ). (1 Mark) The examples are papaya ,watermelon, cucumber. (1 Mark for any two examples)
0	The molecules of air and other fine particles in the atmosphere have size smaller than the wavelength of the visible light. These are more effective in scattering light of shorter wavelength blue and longer wavelengths of red colour. As we go to higher altitude there is no atmosphere and no scattering takes place. Therefore sky appears dark instead of blue to an astronaut. Regardless of the number of points, Give marks any form of answer based on key words. (2 Marks)

31	Formula – 1 mark, Calculation – 0.5 mark, Answer with unit – 0.5 mark) $I = 0.5\ A$, $t = 20\ min = 20 \times 60\ s = 1200\ s$, $Q = ?$ $I = Q/t$ $Q = I \times t$ $= 0.5 \times 1200$ $= 600\ C$ Thus, 600 coulombs are charged through the circuit.
32	a) Iron is a better conductor than mercury. (1 Mark) b) Silver is the best conductor. (1 Mark)
33	• A coil of many circular turns of insulated copper wire wrapped closely in the shape of the cylinder is called solenoid. • The pattern of magnetic field lines around it is same as the magnetic field lines around the bar magnet. • One end of solenoid behaves as a magnetic north pole while the other end behaves as magnetic south poles. The magnetic field is uniform inside the solenoid. • A strong magnetic field produced inside a solenoid can be used to magnetise a piece of magnetic material. (Regardless of the number of points, Give marks any form of answer based on ke words.) (2 Marks)
34	We can reduce the problem of waste disposal by these methods- • Recycling - Tin, metal objects, paper glass, Polythene, Can be recycled. • Composting - Biodegradable waste like remaining food, fruit, vegetable peels can be compost which is useful to increase soil fertility. • Hospital waste can be combusted at high temperature so its ash is formed waste can be disposed at landfills. • Avoid non-biodegradable items like polyethene and plastic, fertilizers, pesticides. • Use of paper bags. • Sewage treatment which reduces waste Of water. Production of biogas. (1 mark for each correct point, any two points)
5	Natural ecosystem : Forest, Sea (1 Mark) Artificial Ecosystem: Garden, Aquarium (1 Mark)
	The organs of human respiratory system are The human respiratory system has the following main organ – Nostril, nasal passage, pharynx, trachea,

	bronchi, bronchiole, lungs (0.5 mark for each correct point, any four points)
37	Fleming's Left Hand Rule states that if we arrange our thumb, forefinger and middle finger of the left-hand perpendicular to each other, then the thumb points towards the direction of the force experienced by the conductor, the forefinger points towards the direction of the magnetic field and the middle finger points towards the direction of the electric current. (2 Marks)
	Section – C (18 Marks)
38	A combination reaction is a chemical reaction where two or more reactants combine to form a single new products. General equation A + B → AB. (1 Mark) Burning of coal : $C(s) + O_2(g) \rightarrow CO_2(g)$ Formation of water from H_2 and O_2 gas $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$ $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + Heat$ (Any two example, two marks) In the above reactions two or more substance (elements or compound) combine to form a single product.
39	(a) Element X is metal . Its name is Sodium(Na) (1 Mark) (b) Element Y is Non metal. Its name is Chlorine (Cl) (1 Mark) (c) The ionic compound formed X and Y is sodium chloride (NaCl) (1 Mark)
40	(a) In test tube 'A' the colour of iron nail will change. (1 Mark) (b) Name of chemical reaction associated with it is oxidation/Rusting /corrosion. (1 Mark) (c) Essential condition : (1)Presence of oxygen(air) (2)Presence of Moisture(water) (1 Mark)
40	(Only for visually impaired) (a) Gallium Or Cesium (1 Mark) (b) Potassium Or Sodium (1 Mark) (c) Gold or platinum or Silver or Copper (1 Mark)
41	 (Two marks for figure) Functions of dendrite: The dendrites are parts of a neuron that receive and transmit messages. Receive messages from other neurons and the environment.

They carry impulses toward the cell body.
They form connections with other neurons terminals.
(Any one point, One marks)

41 (Only for visually impaired)

A neuron, also called a nerve cell, is the basic unit of the nervous system, responsible for receiving, processing, and transmitting electrical signals throughout the body, allowing us to feel, move, think, and remember; it consists of a cell body, dendrites that receive signals, and an axon that sends signals to other neurons, with the communication happening at junctions called synapses.

Dendrites: These are branch-like structures that receive messages from other neurons and allow the transmission of messages to the cell body.

Cell Body: Each neuron has a cell body with a nucleus

Axon: Axon is a-like structure that carries electrical impulse from the cell body to the axon terminals that pass the impulse to another neuron.

Function: Nerve impulse transmission.

(Regardless of the number of points, Give marks any form of answer based on key words.)

Changes seen in the girls at the time of puberty

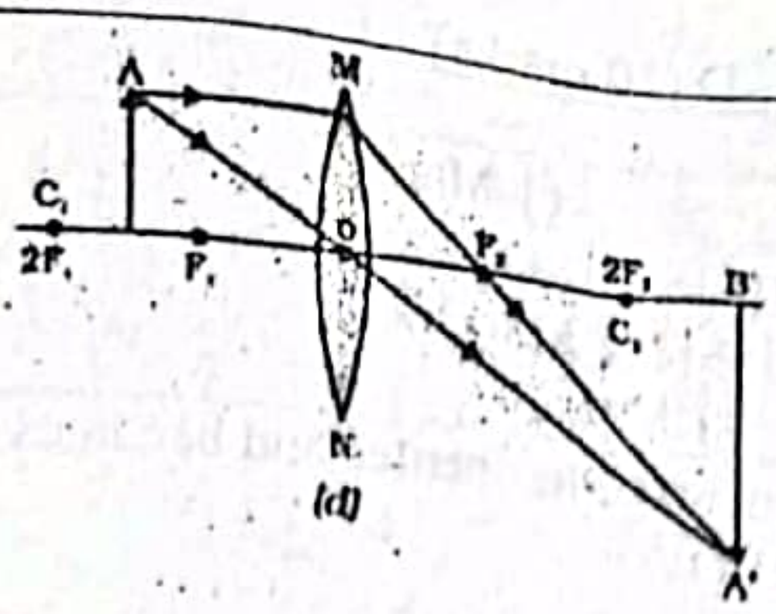
1. Breast size begins to increase, with darkening of the nipples.
2. Onset of menstrual cycle.
3. Hair growth under armpits and pubic area
4. Thin hair growth on legs, arms and face.
5. Skin becomes oily and begin to develop pimples
6. Begin to be conscious and aware of own body and that of others in new ways.

(0.5 Marks for each correct point)

Male reproductive system	Female reproductive system
1.It produces male gamete 2. Organs - testes, seminal vesicle, vas deferens, scrotum, penis. 3. Testes produces testosterone and sperms 4. Testes are located outside the abdominal cavity in scrotum. . 5. Prostate gland and Seminal vesicle add their secretion which nourishes sperm.	1. It produces female gamete 2. Organs- Ovary. Oviduct, uterus, cervix, vagina. 3. Ovary produces estrogen and ovum. 4. Ovaries are located inside the abdominal cavity. 5. One egg produce by one of the ovary every month is carried to the womb through oviduct.

(1 Mark for each correct difference, Any three differences)

) Head lights of car – concave mirror (1 Mark)
) Side/rear view mirror of a vehicle – Convex mirror (1 Mark)
Solar furnace – Concave mirror (1 Mark)

45	 (1.5 Marks for figure) Image Position : Beyond 2F2 (0.5 Mark) Image size : enlarge (0.5 Mark) Image Nature : Real and inverted (0.5 Mark)
45	(Only for visually impaired) - In a spherical mirror, the distance of the object from its pole is called the object distance (u). - The distance of the image from the pole of the mirror is called the image distance (v). - The distance of the principal focus from the pole is called the focal length (f). - There is a relationship between these three quantities given by the mirror formula which is expressed as $1/v + 1/u = 1/f$ This formula is valid in all situations for all spherical mirrors for all positions of the object. You must use the New Cartesian Sign Convention while substituting numerical values for u, v, f, and R in the mirror formula for solving problems. (Regardless of the number of points, Give marks any form of answer based on key words.)
46	$I = 4A$ $V = 60V$ Ohm law $V = IR$ (1 Mark) $60 = 4 \times R$ $R = 60/4$ $R = 15\Omega$ (1 Mark) $V = 120V$ $I = ?$ Ohms law $V = IR$ $120 = I \times 15$ $I = 120/15$ $I = 8A$ (1 Mark)

Section –D (20 marks)

47 (a) Neutral – Solution D (pH-7) (1 Mark)
(b) Strongly alkaline – Solution C (pH -11) (1 Mark)
(c) Strongly acidic - Solution B (pH -1) (1 Mark).
C< E < D < A < B (1 Mark)

48 On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemi hydrate ($CaSO_4.1/2H_2O$).
This is called plaster of Paris.

$$CaSO_4.2H_2O \rightleftharpoons CaSO_4.1/2H_2O + 1\frac{1}{2}H_2O.$$ (2 Marks)

Uses: a used as a plaster supporting fractured bones in the right position
Making toys, materials for decoration and making surfaces smooth. (2Marks)

49 (a)

Soap	Detergent
1.Molecules of soap are sodium or Potassium salts of long chain Carboxylic Acids	1.They are sodium salts of Sulphonic acids and ammonium salts with long chain of carbon.
2. Soaps can not be used with hard water.	2. Detergent works well with hard and soft water both.
3. Forms precipitates with hard water	3. Do not form precipitates with hard water.
4. Soaps are used for washing hands, and kitchen utensils	4. Detergents are used for cleaning homes, making shampoo and for laundry.

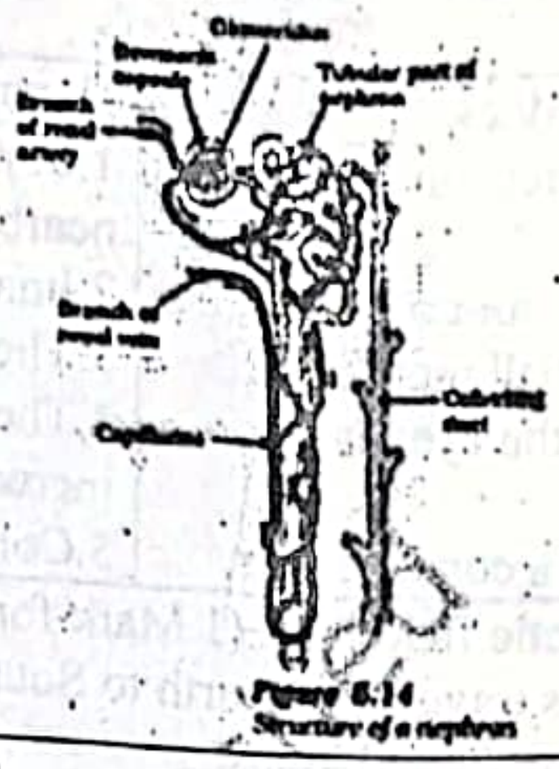
(1 Mark for each correct difference, Any two differences)

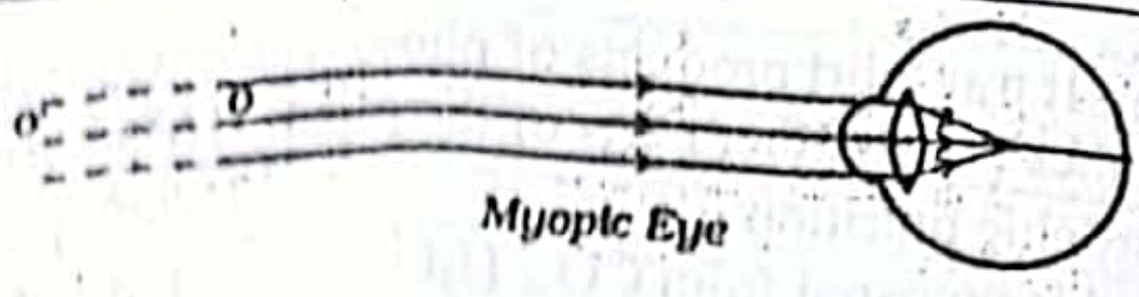
49 (b) Propanol - Name of functional Group: Alcohol. Formula: OH (1 Mark)
Propanone - Name of functional Group: Ketone formula: -CO- (1 Mark)

50 (a)Lymph is involved in transportation (2 Mark)
* Through the pores present in the walls of capillaries some amount of plasma, proteins, and blood cells escape into inter cellular space in the tissues to form the tissue fluid or lymph.
* It is similar to the plasma of blood but Colourless and contains less proteins. Lymph drains into lymphatic capillaries. from the inter cellular spaces, which join to form large lymph vessels that finally open into larger veins.
•Lymph Carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.

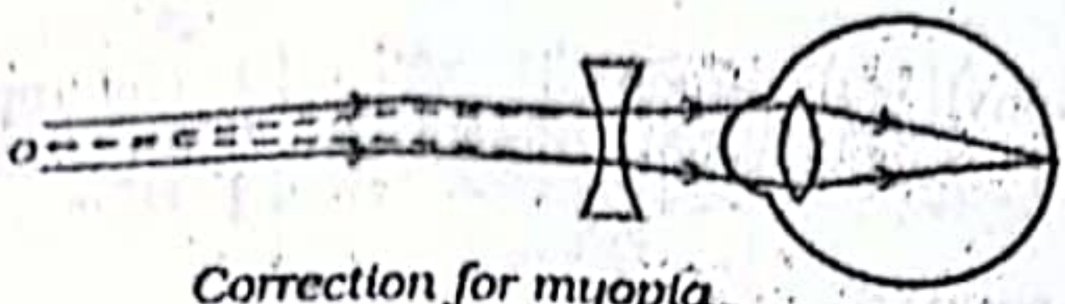
B) Transport systems in highly organized Plants Two transport systems in plants
1. Xylem
2. Phloem. (0.5 Mark for each)

Xylem : It moves water and minerals obtained from the soil.

	Phloem: It transport products of photosynthesis(food) from the leaves where they are synthesized to other parts of the plant. (1Mark for the function of both)
51 (a)	Autotrophic nutrition 1. Food is prepared from CO_2, H_2O and sunlight. 2. Chlorophyll is required. 3. E.g. All green plants and some green bacteria 4. They are Producers Heterotrophic nutrition 1. Food is obtained from other organism. 2. Chlorophyll is not required. 3. E.g. Fungi, all animal. 4. They are consumers (1 Mark for each correct difference, any two differences)
51 (b)	Nephron (2 mark)  Figure 8.14 Structure of a nephron
51 (b)	(Only for visually impaired) The main organs of the human excretory system are the kidneys, ureters, urinary bladder, and urethra. (0.5 Marks for each correct organ)
52	Myopia (near-sightedness) defect and its correction. Myopia defect description (2Marks) Myopia defect correction (1 Marks) Myopia -Myopia is also known as nearsightedness. A person with myopia can see nearby objects clearly but cannot see distant objects distinctly. - A person with this defect has the far point nearer than infinity. Such a person may see clearly up to a distance of a few meters. - In a myopic eye, the image of a distant object is formed in front of the retina and not at the retina itself. - This defect may arise due to (i) excessive curvature of the eye lens, or (ii) elongation of the eyeball. Correction: - This defect can be corrected by using a concave lens of suitable power. -This is illustrated in a concave lens of suitable power will bring the image back or to the retina. (Figure :1 Marks)



Myopic Eye



Correction for myopia

52 (Only for visually impaired) (1 Mark for each correct difference, Any four differences)

Myopia (Short-sightedness)	Hypermetropia (Far-sightedness)
1.Can see nearby objects but cannot see far-off objects. 2.Image is formed in front of the retina. 3.The size of the eyeball increases. 4The focal length of the eye lens decreases. 5.Corrected by using a concave lens.	1.Can see far-off objects but cannot see nearby objects. 2.Image is formed beyond the retina. 3.The size of the eyeball decreases. 4.The focal length of the eye lens increases. 5.Corrected by using a convex lens.

53 a) Properties of Magnetic field lines (1 Mark for each correct point ,any two)

1. Magnetic Field lines travel from north to South outside and inside south to north Hence they always form closed loops.

2. The magnetic Field lines are crowded near. the pole where the field is strong and far From the magnet where the field is weak.

3. No two field-lines are found to Cross each Other (They do not intersect each other.)

4.The magnetic field lines are closed curves.

b). Electric short circuit overloading can occur when live wire and neutral wire come into direct contact. In such a situation, the current in the circuit abruptly increases. The is called short circuiting.

Short short-circuit will occur when many appliances run at a time.

It can be prevented by using electric fuse.

54	(a) Full forms CFCs (Chloro-Fluoro Carbons) (1 Mark) UNEP –United Nation Environment Programme. (1 Mark) (b) Decomposers feed on the excretory substances as well as dead bodies of plants and animals. Bacteria and fungi are decomposers. → They breakdown the complex organic substances into simple inorganic substances. → Such simple inorganic substances are used up by the plants again. → So, they play an important role in cyclic pathway of the elements. (2 Mark, any two points)