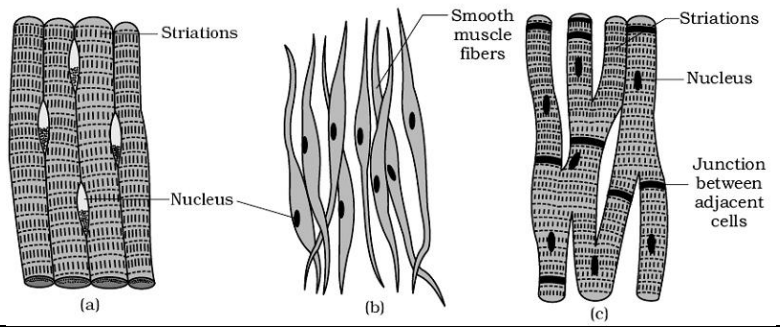
Indian School Al Wadi Al Kabir
Final Examination (2024-2025)

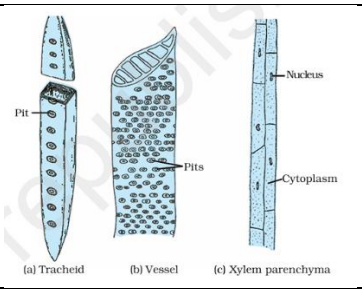
Class: IX | Subject: Science | Max. marks: 80
Date: 23/02/2025 | SET-II | Time: 3 hours

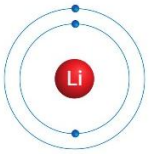
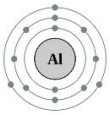
Marking scheme

SECTION - A **Select and write one most appropriate option out of the four options given for each ofthe questions 1 – 20.**		
Q. No	Questions	Marks
1	B. 2	1
2	B.28	1
3	C. Total number of protons and neutrons	1
4	A. An atom has equal number of electrons and protons.	1
5	A. Milk	1
6	D. Evaporation	1
7	A. Temperature and pressure	1
8	D. Hypotonic	1
9	C. Proteins will not be synthesised	1
10	C. Meristematic tissue	1
11	A. Striated muscle fibre	1
12	B. Chemical fertilisers	1
13	C. 2and 4	1
14	D. 1000 watts	1
15	A. Bee keeping	1
16	D. *Apis mellifera*	1
Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true and R is not the correct explanation of A (c) A is true but R is false (d) A is False but R is true		
17	a) Both A and R are true and R is the correct explanation of assertion.	1
18	c) A is true but R is false.	1
19	c) A is true but R is false.	1
20	d) A is false and R is true.	1
SECTION – B **Q. no. 21 to 26 are very short answer questions**		
21	A. The heat energy required to convert 1kg of a solid into liquid at atmospheric pressure at its melting point. B. 311+273=584K	1+1

22	A nerve cell consists of 3 parts. (i) Cell body - It is also called the cyton. It gives out short extensions called the dendrites which receive the impulses. (ii) Axon - It is a long extension of the dendron arising from the cell body. It transmits impulses away from the cell body, (iii) Dendrites - These are short, branched parts arising from the cell body. They receive nerve impulses.	2
23	i) Skin-Stratified squamous epithelium and prevents wear and tear. ii)Respiratory tract-ciliated columnar epithelium. Cilia are hair-like structures that can move in a coordinated manner.The primary function of ciliated columnar epithelium in the respiratory tract is to move particles and mucus in a specific direction. **OR** A-Apical meristem and C- Lateral meristem. Apical meristem-increase in length of root and Lateral meristem helps in converting the stem into trunk.	1+1
24	A. Sound travels as a longitudinal wave through a material medium. In sound waves the individual particles of the medium move in a direction parallel to the direction of propagation of the disturbance B. Any one difference OR A. i) loudness- Amplitude ii) pitch- Frequency B. A-loud sound B- Soft sound	(½ + ½) (½ + ½) (½ + ½) (½ + ½)
25	A. Float B. Statement	1+1
26		Any two-1+1
SECTION - C **Q.no. 27 to 33 are short answer questions.**		
27	A. i) Particles do not settle down at the bottom when left undisturbed. ii) Particles cannot be separated by filtration. iii)Particles cannot be seen with naked eyes. C. Mass by mass percentage of the solution= $\frac{volume\ of\ solute}{volume\ of\ solution}$ x 100	½ x3=1 ½ 1 ½

	$=\frac{20}{400}$x 100 = 10%	
28	A. The number of atoms present in a molecule is known as atomicity. Eg:- Cl_2, H_2, N_2(Any two) B. i) CH_3OH 1x12+3x1+1x16+1x1=32u ii) NH_3- 1x14+3x1=17u **OR** A. Cation-Ca^{2+}, Na^{+}, Al^{3+} (Any one example) Anion- Cl^{-}, O^{2-} F^{-} (Any one example) B. Sum of atomic masses of all atoms present in a molecule. H_2SO_4- 2x1+1x32+4x16= 98u	1+1 ½ ½ ½ + ½ 1+1
29	A. In plant cells vacuoles are filled with cell sap which provide turgidity and rigidity to the cell. B. The plasma membrane regulates the movement of substances in and out of the cell by diffusion or osmosis. If the plasma membrane ruptures or breaks then the materials inside the cell will come out and the cell will be destroyed. C. i) Mitochondria ii) Lysosomes	1+1+1
30	A. Greater the mass, greater its inertia (directly proportional) B. Application of Newton's second law. Force is inversely proportional to time for the same change in momentum. Statement	1 1 1
31	A. Statement B. $F \propto m_1 \times m_2$ and $F \propto \frac{1}{r^2}$ Combining (1) and (2), we get $F \propto \frac{m_1 \times m_2}{r^2}$ or $F = G \times \frac{m_1 m_2}{r^2}$ where G is a constant known as universal gravitational constant. . A. t=0.4 sec, g=10m/s, u=0m/s, v=? v= u + at v= 0 + 10×0.4 v= 4m/s.	1 1 (½ + ½)
32	A.Since velocity is not changing acceleration is equal to zero. [a = Δv/Δt = 0] B.Reading the graph, velocity = 20 ms-1 (constant) C.Distance covered in 15 seconds = Area of ABNO = v × t = 20 × 15 = 300 m	1 1 (½ + ½)

33		1+1+1
	SECTION - D **Q.no. 34 to 36 are Long answer questions.**	
34	***Attempt either A or B*** A. i) The Italian bees have high honey collection capacity. They sting somewhat less. They stay in a given beehive for long periods, and breed very well. ii) Pasturage is the availability of flowers to the bees for nectar and pollen collection. Pasturage is related to honey production because it determines the taste of honey and the quantity of honey. iii) Bee-keeping needs low investments; farmers use it as an additional income generating activity. In addition to honey, the beehives are a source of wax which is used in various medicinal preparations. **OR** B. i) Higher yield, improved quality, biotic and abiotic resistance, change in maturity duration, early maturation, wider adaptability, desired agronomic traits. ii)Prior to the sowing of the crop seeds, some plants like sun hemp or guar are grown and then mulched by ploughing them into the soil. These green plants thus turn into green manure which helps in enriching the soil in nitrogen and phosphorus. iii) Mixed cropping is growing two or more crops simultaneously on the same piece of land, for example, wheat + gram. Inter-cropping is growing two or more crops simultaneously on the same field in a definite pattern. A few rows of one crop alternate with a few rows of a second crop, for example, soyabean + maize.	2+2+1 1+2+2
35	i). (a)-0 (b)-1 ii). Isotopes of an element have the same atomic number and electronic configuration. iii) Isotopes are atoms of the same element with same atomic number but different mass numbers. Eg:- Isotopes of hydrogen- hydrogen-1, hydrogen-2 and hydrogen-3 (Any one example for isotopes) **OR** B. i) Number of electrons-19, number of neutrons-20 ii) a) Lithium-K(2) L(1)	1+1 1 1+1 ½ + ½ ½

	 b) Aluminium-K(2) L(8) M(3)  iii) Argon- K L M and calcium- K L M N 2 8 8 2 8 8 2	1 ½ 1 ½ + ½
36	A. i) Fig i- Zero work done Fig ii- Positive work done ii)Force should be applied and object should be displaced iii)W= F×s iv)W = F×s = 12 × 12 = 144 J v)180^0, work done by frictional force(any example) **OR** B. i)Potential energy; energy possessed by a body by virtue of its position. ii)W = force × displacement W = mg×h ∴ W = mgh As the work done is equal to mgh which is gained by the object, potential energy Ep is given as: Ep = mgh iii) W=F x s = 600x 10 =6000J P=W/t =6000/30 =200W	1 1 1 (½ + ½) (½ + ½) ½+1 1½ (½ + ½) (½ + ½)
SECTION – E **Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts.Internal choice is provided in one of these sub-parts.**		
37	A. i) $AlCl_3$ ii) MgO. The number of atoms present in a molecule is known as atomicity. Eg: - Cl_2, H_2, N_2(Any two) B. Molecules of elements contain same type of atoms and molecules of compounds contain different type of atoms. OR B. Chlorine atomic number is 17. Number of protons = number of electrons = 17. So, chlorine atom is electrically neutral. But when chlorine atom is changed to chloride ion it has gained one electron so the number of electrons is more than a number of protons hence it is negatively charged.	1+1 1+1 1+1

38	A. Milk-producing females are called milch animals (dairy animals), while the ones used for farm labour are called draught animals. **OR** B. The hybrid produced by crossing local (Indian) breeds of cattle with exotic breeds has higher milk productivity and has better ability to survive in the local environment, unlike exotic breeds. C. Roughage and concentrates. D. Animals require regular brushing to remove dirt and loose hair. They should be sheltered under well-ventilated roofed sheds that protect them from rain, heat and cold. The floor of the cattle shed needs to be sloping so as to stay dry and to facilitate cleaning.	2+1+1
39	A. The angle of incidence is always equal to the angle of reflection The incident sound wave, the reflected sound wave and the normal to the incident all belong in the same plane. B. Distance between sound source and reflecting surface should be minimum 17.2m. Time interval between the waves should be minimum 0.1s. C.The total angle = 130^0 For sound waves angle of incidence (i)= angle of refraction (r) So angle of incidence = $130/2=65^0$ **OR** D. Time taken to complete one oscillation/vibration Given n=200 Hz , T=1/Frequency=1/200=0.005 s	(½ + ½) (½ + ½) 1+1 OR 1 1