$\therefore$  Thus, the speed of light in air is  $3 \times 10^8$  m/s. Marks: 2

**Question 5.** List four stakeholders which may be helpful in the conservation of forests.

**Solution:** Four stakeholders which may help in the conservation of forests are

1. The Forest Department of the Government which owns the forest land and controls the resources from forests

2. People who live in and around the forest and are dependent on forest produce to lead their lives

- 3. Industrialists who use various forest products for their factories
- 4. Forest and wildlife activists who want to see forests in their original form.

## Marks: 2

Question 6. The construction of large dams leads to social and environmental problems. List two problems of each category.

Solution: Social problems arise because the construction of dams causes the displacement of a large number of tribals and peasants who are then rendered homeless. They are neither given sufficient compensation or rehabilitation nor do they get any benefits from these projects.

Construction of dams leads to several environmental problems such as deforestation and loss of biodiversity because large areas of forest land get submerged in water leading to an ecological imbalance. Marks: 2

Question 7. The position of eight elements in the Modern Periodic Table is given by whether the parentheses of elements are given in the parentheses.			
Period No.		Note	Sal
2 Li	(3) Be(4	Note	16
3 N	a(11) Mg	tor of	
4 K	(19) Ca(2		
5	b(97) Sr(3	403	

(i) Write the electronic configuration of Ca.

(ii) Predict the number of valence electrons in Rb.

(iii) What is the number of shells in Sr?

(iv) Predict whether K is a metal or a non-metal.

(v) Which one of these elements has the largest atom in size?

(vi) Arrange Be, Ca, Mg and Rb in the increasing order of the size of their respective atoms.

Solution: (i) Electronic configuration of Ca (20): 2, 8, 8, 2

(ii) Rb belongs to Group 1, and all Group 1 elements have one valence electron.

(iii) Sr belongs to Period 5, and thus, it has five shells.

(iv) K is a metal with electronic configuration 2, 8, 8, 1. Thus, it will donate its one electron to acquire the noble gas configuration.

(v) The atomic size increases down the group and decreases across a period. Rb is the element which has the largest atomic size.

(vi) Be < Mg < Ca < Rb

Marks: 3







The molecules of soap are sodium or potassium salts of long chain carboxylic acids. So, when a student puts a drop of reaction mixture of a saponification reaction first on a blue litmus paper and then on a red litmus paper, he will observe that there is no change in the blue litmus paper and the red litmus paper turns blue. **Marks: 1** 

**Question 33.** In the neighbourhood of your school, hard water required for an experiment is not available. Select from the following group of salts available in your school, a group each member of which, if dissolved in distilled water, will make it hard:

(a) Sodium chloride, calcium chloride

- (b) Potassium chloride, sodium chloride
- (c) Sodium chloride, magnesium chloride
- (d) Calcium chloride, magnesium chloride

**Solution:** (d) Calcium chloride, magnesium chloride

Dissolving chloride salts of calcium or magnesium in distilled water will make the water hard, and lather formation will take place with difficulty.

## Marks: 1

**Question 34.** A student is observing a permanent slide showing sequentially the different stages of asexual reproduction taking place in yeast. Name this process and draw diagrams, of what he observes, in a proper sequence.

Solution: Yeast reproduces asexually by the process of budding. Different stages of budding is observed by the student are depicted below:



## Mar<mark>ks: 2</mark>

**Question 35.** An object of height 2.5 cm is placed at a distance of 15 cm from the optical centre `O' of a convex lens of focal length 10 cm. Draw a ray diagram to find the position and size of the image formed. Mark optical `O', principal focus F and height of the image on the diagram.

**Solution:** Ray diagram:



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