

### Sure shots (1 Mark) Questions

1. Name the following:

A component used to control the current.

2. Match the correct pair:

Column 'A'	Column 'B'
Rod like cells	(a) Colour of an image (b) Intensity of light (c) Aperture

3. Find the odd one out:

Temperature, conduction, convection, radiation

4. Write True or False:

In vacuum, the speed of light does not depend upon the frequency of light.

5. Complete the correlation:

Tinning : Tin :: Galvanizing: .....

6. Write true or false :

If the height of the orbit of a satellite increases, its velocity must also increase.

7. Name the following :

The SI unit of resistance.

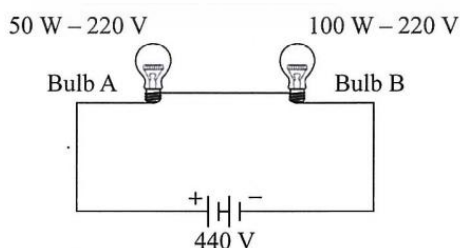
8. Match the correct pair :

Column A	Column 'B'
The wavelength of the violet light	(a) close to 700 nm (b) close to 600 nm (c) close to 400 nm

9. Find the odd one out:

$C_2H_4$ ,  $C_4H_{10}$ ,  $C_3H_8$ ,  $CH_4$

10. Observe the following figure. Which bulb will fuse?



11. By observing the correlation in first pair, complete the second pair :

IRNSS : Direction showing satellite :: INSAT : .....

12. Match the correct pair :

Column 'A'	Column 'B'
Reduction	(a) Combination with oxygen (b) Combination with hydrogen (c) Losing hydrogen

13. Find the odd one out :

Reflection, Neutralization, Refraction, Dispersion.

14. Write true or false :

If a spacecraft has to be sent away from the influence of the earth's gravitational field, its velocity must be less than the escape velocity.

15. Observe the image and write down the concept name :



16. Match the correct pair :

Column 'A'	Column 'B'
Gravitational constant	(a) Zero at the centre of the earth (b) Depends on height (c) Same in the entire universe

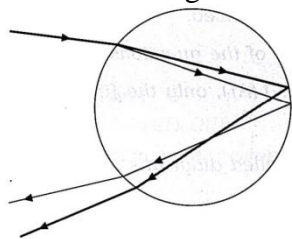
17. Draw structural formulae of compounds from their molecular formula given below :

$C_3H_4$

18. Write true or false:

A satellite needs a specific velocity to revolve in a specific orbit.

19. Identify and write the name of natural process shown in the figure:



20. Find the odd one out :  
INSAT, GSAT, GSLV IRS

21. Name the following :  
Alloy used in heating coils of toaster and electric iron.

22. Find the odd one out :  
Polyethylene, polysaccharide, polystyrene, polypropylene

23. Complete the following table :

Type of satellite	The names of Indian satellite and launcher
Earth observation satellite	(a) Satellite : .....
	(b) Launcher : .....

24. Write true or false :

Outside the earth 'g' varies as  $\frac{1}{(R+h)^2}$

25. Complete the correlation :

Focal length : metre :: Power of a lens : .....

### Sure shots (2 Marks) Questions

26. In cold countries, in winter, even when the water of lakes freezes, aquatic animals and plants can survive.

27. Zero group elements (inert gases) are called noble gases.

28. For electric power transmission, copper or aluminium wire is used.

29. Explain the following reaction with the help of balanced equation : Magnesium burns in air.

30. Distinguish between mass and weight.

31. Write the name and the structure of monomer of teflon and its uses.

32. Write any two rules used for drawing ray diagrams for the formation of an image by a convex lens.

33. Why are geostationary satellites not useful for studies of polar regions?

34. Stars appear to be twinkling at night.

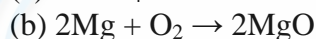
35. Atomic radius goes on decreasing while going from left to right in a period.

36. The weight of a body is different on different planets.

37. Heat energy is being produced in a resistance in a circuit at the rate of 100 W. The current of 3 A is flowing in the circuit. What must be the value of the resistance?

38. Explain the following : In cold regions in winter, the rocks crack due to anomalous expansion of water.

39. Identify the type of chemical reaction given below :



40. Distinguish between metals and nonmetals.

41. Draw a neat labelled diagram of Hope's apparatus.

42. In winter, the pipelines carrying water burst in cold countries.

43. Elements belonging to the same group have the same valency.

44. The material used for fuse has low melting point.

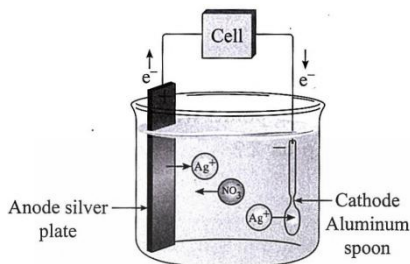
45. Distinguish between AC generator and DC generator.

46. Define absolute humidity. State its unit.

47. The absolute refractive index of water is 1.36. What is the velocity of light in water? (Velocity of light in vacuum =  $3 \times 10^8$  m/s)

48. Explain the term saturated hydrocarbon with example.

49. Identify the process shown in the figure and define it.



50. One can sense colours only in bright light.

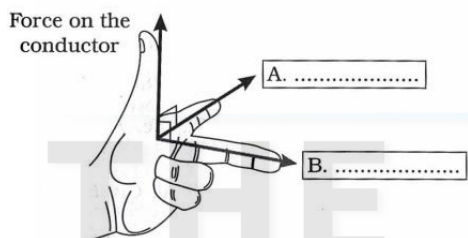
51. The coils in heating devices such as a toaster and electric iron are made of an alloy such as nichrome, rather than a pure metal.

52. When copper articles exposed to air for a long time, gets corroded.

53. What is meant by space debris? Why is there a need to manage the debris?

54. On what basis and how will you determine whether air is saturated with vapour or not?

55. Observe the given figure of Fleming's left hand rule and write the labels of A and B.



56. Identify the electronic configuration of the inert gas elements, second group elements, third row elements, seventeen group elements :

- (a) (2, 8)                      (b) (2, 7)  
 (c) (2, 2)                      (d) (2, 8, 1)

57. Identify the following reactions the reactants that undergo oxidation and reduction:

- (a)  $2Ag_2O \rightarrow 4Ag + O_2 \uparrow$   
 (b)  $2Mg + O_2 \rightarrow 2MgO$

58. With a specific initial velocity, we can jump higher on the moon than on the earth.

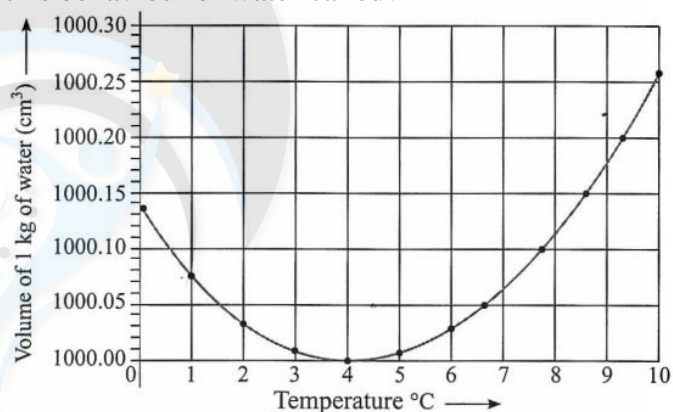
59. A pencil dipped in water obliquely appears bent at the surface of water.

60. Silver amalgam is used for filling dental cavities.

61. Draw a neat labelled diagram of the magnetic field produced by a solenoid.

62. Two tungsten bulbs of wattage 100 W and 60 W power work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor?

63. Observe the following graph. Considering the change in volume of water as its temperature is raised from 0°C, discuss the difference in the behaviour of water and other substances. What is this behaviour of water called?

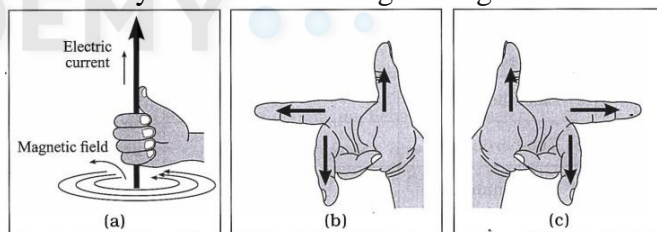


64. Distinguish between Mendeleev's periodic table and Modern periodic table.

65. What do you mean by oxidant? Explain with suitable example.

### Sure shots (3 Marks) Questions

66. Identify the law from the given figures :



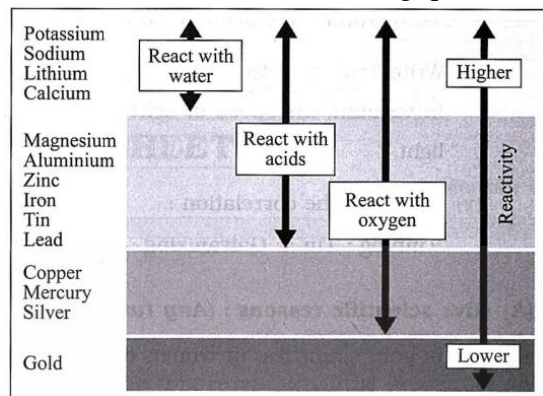
67. (a) What is the principle behind the working of a satellite launch vehicle?

(b) Write the formula for the escape velocity.

(c) Write the long form of ISRO.



68. Observe the given figure of reactivity series of metals and answer the following questions:



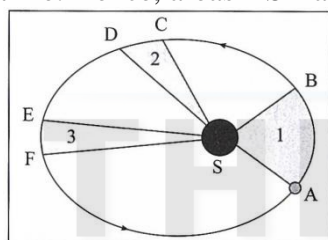
- Name two metals which react with water.
- Name two moderately reactive metals.
- Name the most highly reactive metal and the least reactive metal.

69. Write the step wise balanced equations for the following reactions :



70. 5cm high object is placed at a distance of 25 cm from a converging lens of focal length of 10 cm. Determine the position, size and type of the image.

71. In the given figure, an orbit of a planet around the Sun (S) has been shown. AB and CD are the distances covered by the planet in equal time. Lines AS and CS sweep equal areas in equal intervals of time. Hence, areas ASB and CSD are equal.



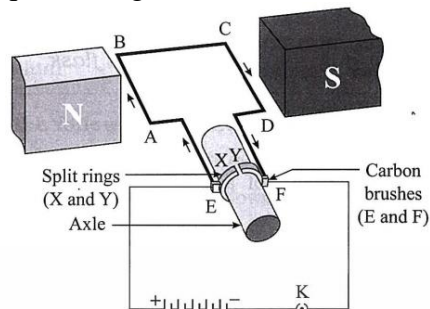
- Which laws do we understand from the above description?
- Write the law regarding area swept.
- Write the law  $T^2 \propto r^3$  in your words.

72. Explain the types of reaction with reference to oxygen and hydrogen. Illustrate with examples.

73. According to Mendeleev's periodic table, complete the chart given below :

Predicted element	Actual element
(a) Eka-silicon	.....
(b) Eka-boron	.....
(c) Eka-aluminium	.....

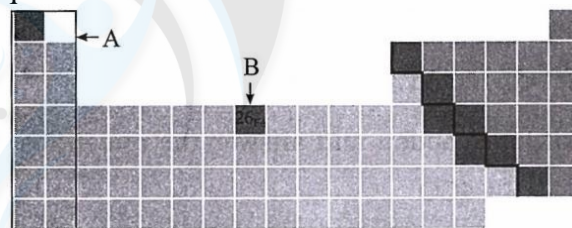
74. Observe the following diagram and answer the questions given below :



- Identify the device shown in the figure.
- On which rule is the working of the above device based?
- Give any two uses of this device.

75. An object thrown vertically upwards reaches a height of 500 m. What was its initial velocity? How long will the object take to come back to the earth? (Assume  $g = 10 \text{ m/s}^2$ .)

76. Observe the figure and answer the following questions :



- Identify the block shown by box A and write an electronic configuration of any one element of this block.
- Identify the block of element denoted by letter B and write its period number.
- Give two examples of metalloids.

77. The observations made by Swarali while doing the experiment are given below. Based on these write answers to the following questions:

Swarali found that the light ray travelling from the denser medium to a rarer medium goes away from the normal. If the angle of incidence (i) is raised by Swarali, the angle of refraction (r) went on increasing. However, after certain value of the angle of incidence, the light ray is seen to return back into the denser medium.

- So, Swarali has some questions. Answer them.
- Name this certain value of i. What is the value of r at that time?
  - Name this process of returning of light in the denser medium. Explain the process.

78. What is meant by an alloy ? Give two examples with chemical composition.

79. What is an artificial satellite? Give one function of each of the following satellites :

- (a) Weather satellites
- (b) Broadcasting satellites.

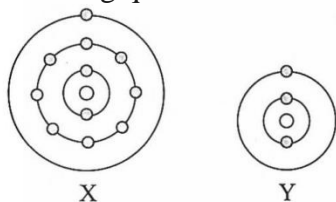
80. Write the IUPAC names of the following structural formulae :

- (a)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- (b)  $\text{CH}_3 - \text{CH}_2 - \text{NH}_2$
- (c)  $\text{CH}_3 - \text{CHO}$

81. Give names of three natural polymers. Write the place of their occurrence and names of monomers from which they are formed.

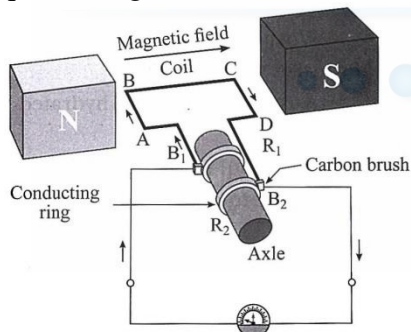
82. A ball falls off a table and reaches the ground in 1s. Assuming  $g = 10 \text{ m/s}^2$ , calculate its speed on reaching the ground and the height of the table.

83. Observe the following diagram and answer the following questions :



- (a) Identify elements X and Y.
- (b) Do these elements belong to the same group? Explain.
- (c) Which element is more electropositive in nature? Why?

84. Observe the following diagram and answer the questions given below:



- (a) Identify the given figure.
- (b) Write the principle on which the appliance works.
- (c) Write the use of the appliance.

85. The electronic configuration of metal 'A' is 2, 8, 1 and that of metal 'B' is 2, 8, 2

- (a) Which of the two metals is more reactive?
- (b) Identify these metals.
- (c) Write their reaction with dilute hydrochloric acid.

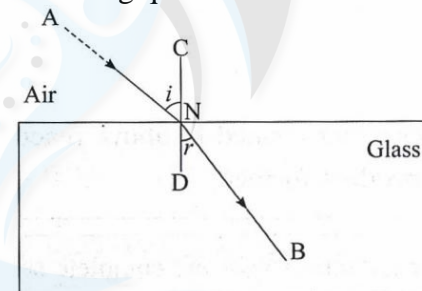
86. What is meant by the orbit of a satellite? On the basis of the height of the satellite, how are the orbits of artificial satellites classified? Explain with diagram.

87. Answer the question given below based on following activity :

Add potassium chromate ( $\text{K}_2\text{CrO}_4$ ) into the solution of barium sulphate ( $\text{BaSO}_4$ ).

- (a) What was the colour of the precipitate formed?
- (b) Write the name of the precipitate.
- (c) Will you call this reaction a displacement reaction or a double displacement reaction?

88. Observe the given figure and answer the following questions:



- (a) Name the process represented by the figure.
- (b) State the two laws related to the process.

89. Complete the process of iron rusting by filling in the blanks of paragraph given below :

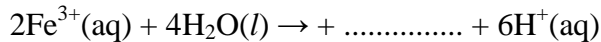
[(a) by colouring with acrylic paints, Zn plating, galvanizing, anodizing, alloying etc. (b) water (c)  $\text{Fe}^{3+}$  (d)  $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}(\text{s})$ , (e)  $4\text{e}^-$ , (f) electrochemical]

The iron rust is formed due to ..... reaction. Different regions on iron surface become anode and cathode.

- (i) Reaction on anode region :  
 $\text{Fe}(\text{s}) \rightarrow \text{Fe}^{2+}(\text{aq}) + 2\text{e}^-$
- (ii) Reaction on cathode region :  
 $\text{O}_2(\text{g}) + 4\text{H}^+(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l})$

When  $\text{Fe}^{2+}$  ions migrate from anode region they react with ..... to form  $\text{Fe}^{3+}$  ions.

A reddish coloured hydrated oxide is formed from ..... ions. It is called rust.



A way to prevent rusting .....

90. Write the structural formulae for the following IUPAC names :

- (a) propan-2-ol (b) 1-Bromopropane  
(c) Butanoic acid.

91. A thermally insulated pot has 150 g ice at temperature  $0^{\circ}\text{C}$ . How much steam of  $100^{\circ}\text{C}$  has to be mixed to it, so that water of temperature  $50^{\circ}\text{C}$  will be obtained?

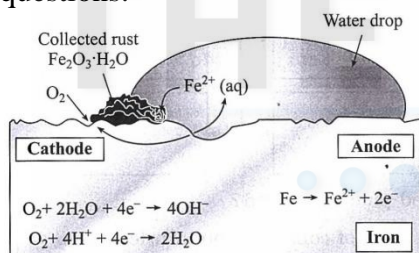
(Given : Specific latent heat of melting of ice =  $80\text{ cal/g}$ , specific latent heat of vaporization of water =  $540\text{ cal/g}$ , specific heat of water =  $1\text{ cal/g}^{\circ}\text{C}$ )

92. Read the given passage and answer the following questions:

The home electrical connection consists of 'live', 'neutral' and 'earth' wires. The 'live' and the 'neutral' wires have potential difference of  $220\text{ V}$ . The 'earth' wire is connected to ground. Due to a fault in the equipment or if the plastic coating on the 'live' and the 'neutral' wires gives away, then the two wires come in contact with each other and a large current flows through it producing heat. If any inflammable material (such as wood, cloth, plastic, etc.) exists around that place it can catch fire. Therefore a fuse wire is used as a precautionary measure.

- (a) Name the two wires having potential difference of  $220\text{ V}$   
(b) What is short circuit?  
(c) Write the function of a fuse.

93. Observe the following figure and answer the questions:



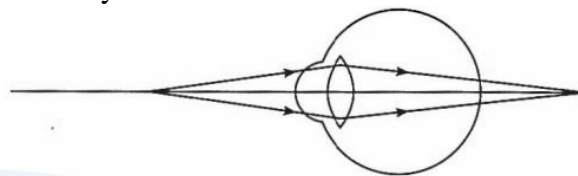
- (a) What is a rust?  
(b) Write the chemical formula of rust.  
(c) Write the reaction of oxidation of iron at cathode.

94. An element has its electron configuration as 2, 8, 8, 2. Now answer the following questions:

- (a) What is the atomic number of this element?  
(b) What is the group of this element?  
(c) To which period does this element belong?

95. The mass of a planet is 3 times the mass of the earth. Its diameter is  $25600\text{ km}$  and the earth's diameter is  $12800\text{ km}$ . Find the acceleration due to gravity at the surface of the planet.  
[ $g(\text{earth}) = 9.8\text{ m/s}^2$ ]

96. Given below is a diagram showing a defect in human eye.



Study the above diagram and answer the following questions :

- (a) Name the defect shown in the figure.  
(b) Name the type of lens used to correct the eye defect.  
(c) Give any one possible reason for this defect of eye in human beings.

97. Explain the term structural isomerism with example. Draw structural isomer also.

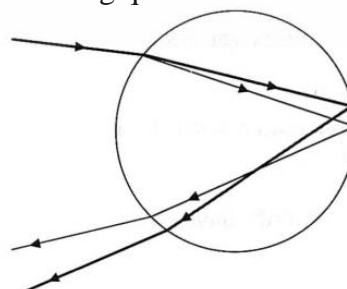
98. An iron ball of mass  $3\text{ kg}$  is released from a height of  $125\text{ m}$  and falls freely to the ground. Assuming that the value of  $g$  is  $10\text{ m/s}^2$ , calculate  
(a) the time taken by the ball to reach the ground.  
(b) the velocity of the ball on reaching the ground.  
(c) the height of the ball at half the time it takes to reach the ground.

99. Draw the structures of isomers of pentane ( $\text{C}_5\text{H}_{12}$ ).

100. Liquid ammonia is used in ice factory for making ice from water. If water at  $20^{\circ}\text{C}$  is to be converted into  $2\text{ kg}$  ice at  $0^{\circ}\text{C}$ , how many grams of ammonia are to be evaporated?

(Given : The latent heat of vaporization of ammonia =  $341\text{ cal/g}$ )

101. Observe the given figure and answer the following questions :





- (a) Identify and write the natural process shown in the figure.  
 (b) List the phenomena which are observed in this process.  
 (c) Redraw the diagram and show the above phenomena in it. Also label the respective colour of rays.

102. Classify into straight chain carbon compounds, branched chain carbon compounds and ring carbon compounds :

- (a) Propene (b) Butane  
 (c) Isobutane (d) Cyclopentane  
 (e) Benzene (f) Isobutylene.

103. If the mass of a planet is eight times the mass of the earth and its radius is 'twice the radius of the earth, what will be the escape velocity for that planet?

104. When sodium chromate solution is mixed with barium sulphate solution, a precipitate is formed.

- (a) What is the colour of the precipitate formed?  
 (b) Name the precipitate.  
 (c) What is the type of chemical reaction?

105. In the extraction of aluminium :

- (a) Name the process of concentration of bauxite.  
 (b) Write the cathode reaction in electrolytic reduction of alumina.  
 (c) Write the formula of cryolite in the extraction of aluminium.

### Sure shots (5 Marks) Questions

106. With a neat labelled diagram, explain how the formation of rainbow occurs.

107. Draw the electron-dot structure of the following molecules (without showing circles):

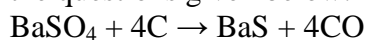
- (a) Methane (b) Ethene  
 (c) Methanol (d) Water  
 (e) Nitrogen molecule.

108. Observe the following diagram and answer the questions:



- (a) Which eye defect is shown in this diagram?  
 (b) What are the possible reasons for this eye defect?  
 (c) How is this defect corrected? Write it in brief.

109. (a) Observe the following reaction and answer the questions given below:

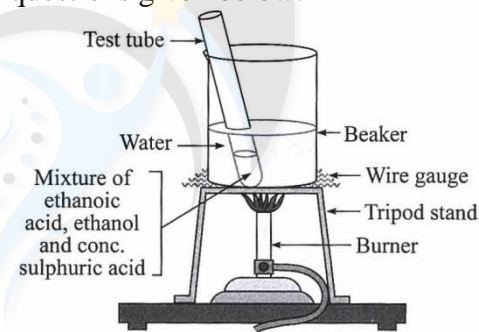


- (i) What type of reaction is it? Justify.  
 (ii) Give one more example.  
 (b) Define: (i) Oxidation reaction  
 (ii) Reduction reaction.

110. (a) Anil cannot see the blackboard writing clearly, but he can see nearby objects clearly.

- (i) What is the eye defect he is suffering from?  
 (ii) How is it corrected?  
 (b) Anil's uncle cannot see nearby objects clearly, but he can see distant objects clearly.  
 (i) What is the eye defect he is suffering from?  
 (ii) How is it corrected?  
 (c) When are bifocal lenses used in spectacles?

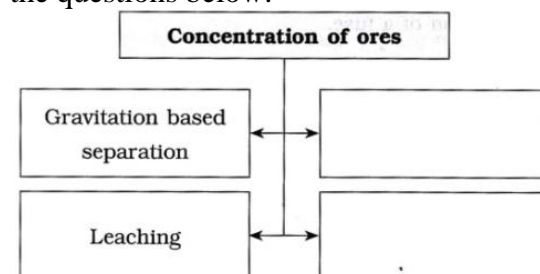
111. Observe the following diagram and answer the questions given below:



- (a) Identify the reaction shown in diagram.  
 (b) Write the molecular formula of product of reaction.  
 (c) State the property of product formed in above reaction.  
 (d) Give two uses of the product formed.

112. (a) If the absolute refractive indices of glass and water are  $\frac{3}{2}$  and  $\frac{4}{3}$  respectively, then what is the refractive index of glass with respect to water?  
 (b) Draw a neat and labelled diagram to show refraction of light through a glass slab.

113. Complete the following flow chart and answer the questions below:



- (a) In which method pine oil is used?  
(b) Explain that method of concentration in brief.

114. In a Std. X class, out of 40 students, 10 students use spectacles, 2 students have positive power and 8 students have negative power of lenses in their spectacles.

Answer the following questions :

- (a) What does the negative power indicate?  
(b) What does the positive power indicate?  
(c) What defect of eyesight do most of the students suffer from?  
(d) Give two possible reasons for the above defect.

115.

Element	K	Na	Rb	Cs	Li
Atomic radius (pm)	231	186	244	262	152

- (a) By referring to the modern periodic table find out the groups to which above the elements belong.  
(b) Arrange the above elements vertically downwards in an increasing order of atomic radii.  
(c) Does this arrangement match with the pattern of the group 1 of the modern periodic table?  
(d) Which of the above elements have the biggest and the smallest atom?  
(e) What is the periodic trend observed in the variation of atomic radii down a group?

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