

**VSA: (1 marks each)**

1.	State one reason for placing Mg and Ca in the same group of the periodic table.	1
2.	State two roles of testes in male reproductive system	1
3.	Why is re-use of materials better than recycling in saving the environment?	1

**SA: (2 marks each)**

1.	What is a homologous series? Write the name and draw the structure of the second member of the alkene series.	2
2.	Give one example of each- a) Metal having valency 2. b) Non metal having valency 2. c) Element with completely filled outermost shell. d) Element with three shells, having 4 electrons in the outermost shell.	2
3.	To protect the food plants from insects, an insecticide was sprayed in small amounts but it was detected in high concentration in human beings. How did it happen?	2

**SA: II (3 marks each)**

1.	How do the following traits change in a period from left to right in the periodic table – a) Atomic size b) Valency c) Metallic character.	3
2.	What are isomers? Draw all possible isomers of C <sub>4</sub> H <sub>10</sub> and name them.	3
3.	Two elements 'X' and 'Y' belong to the second group of the periodic table. 'X' has 2 shells and 'Y' has 3 shells in it – a) Which of these is more metallic in nature and why? b) What is the formula of the chloride of 'X' and sulphide of 'Y'? c) Is the valency of 'X' same as that of 'Y' or different? Why?	3
4.	a) Why do we see different variety of organisms around us? b) In which type of reproduction – i) Off springs are identical? ii) Exact similar offspring's are not produced?	3
5.	How do species of two isolated subpopulations become two different species?	3

6.	Define – a) Spore formation b) Regeneration c) Multiple fission	3
7.	“Variation is useful for the survival of species overtime but the variants have unequal chances of survival.” Explain the statement.	3
8.	What is ‘Placenta’? State its function in human female.	3
9.	a) State the law of refraction of light that defines the refractive index of one medium with respect to the other. b) Express it mathematically also. c) Write the expression relating the refractive index of medium ‘A’ with respect to the medium ‘B’ to the speed of light in the two media ‘A’ & ‘B’. Name the constant when medium ‘B’ is vacuum.	3
10.	Why does the sky appear blue to an observer from the surface of earth? What will be the colour of the sky for an astronaut in a space station? Give reason for your answer.	3
11.	Name the device (type of lens / mirror) used in the following cases and draw ray diagrams to show the image formation in each case – a) Object is placed between the device and its focus, the enlarged image is formed behind it b) The object is placed between infinity and the device, the image is formed behind the device between its pole and focus.	3
12.	An object of height 2 cm is placed at a distance of 30 cm from a convex lens of focal length 10 cm. Find the position, nature and height of the object.	3

**LA: (5 marks each)**

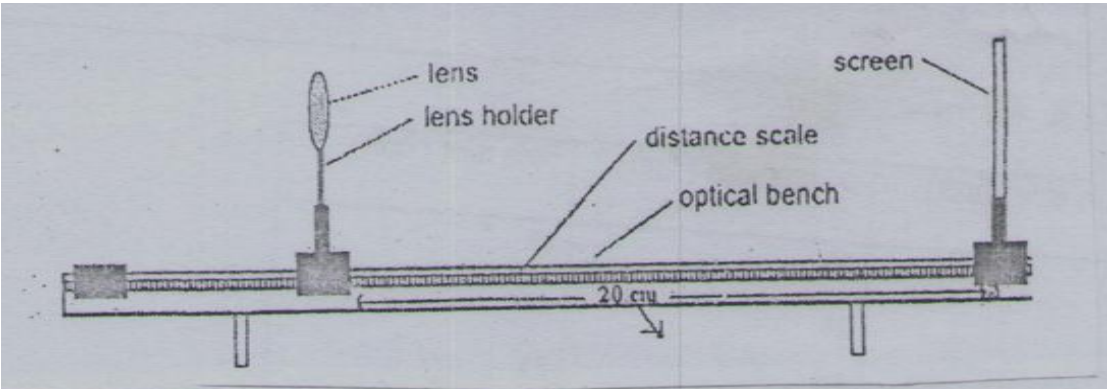
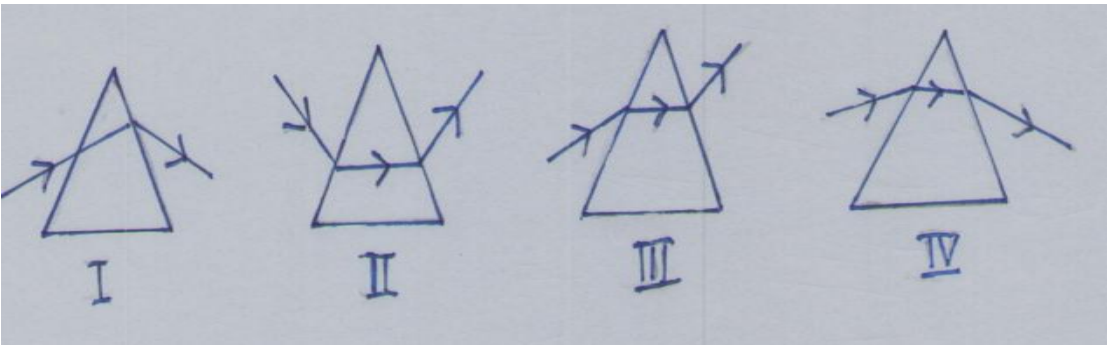
1.	a) Write equations for the reaction of ethanol ( $C_2H_5OH$ ) with – i) Sodium metal ii) conc. $H_2SO_4$ iii) Ethanoic acid in the presence of conc. $H_2SO_4$ b) Why does micelle formation take place when soap is added to water? Why is soap ineffective for washing in hard water?	5
2.	a) Name two viral diseases which can be usually transmitted sexually. How can transmission of such diseases be prevented?  b) A pregnant woman, who is a mother of one daughter, requests the doctor of an ultrasound clinic to test and determine the sex of the baby in her womb. The doctor, very politely, refused and explained the legal and ethical point of view of the situation. On the basis of arguments and counselling, the doctor prepared the woman to happily accept the baby.	5

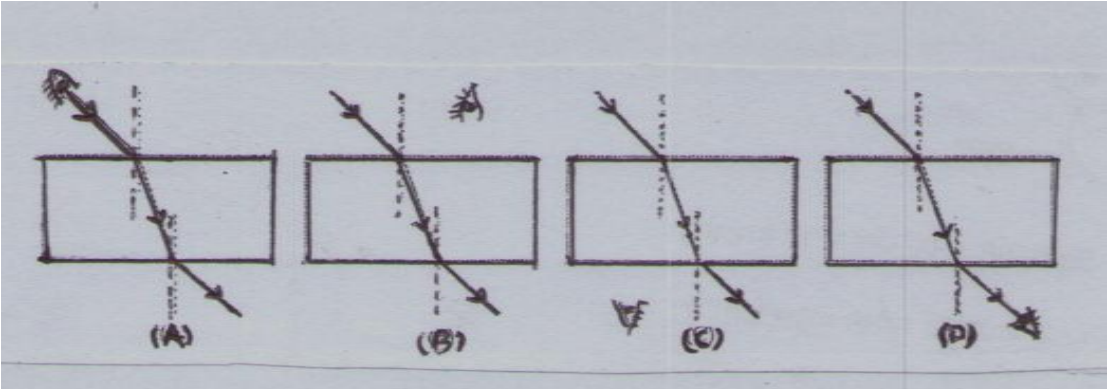
	<p>i) Why is pre-natal sex determination ethically wrong?</p> <p>ii) Had you been in place of the doctor, what argument you would have placed to counsel the mother?</p> <p>iii) State the value (s) exhibited by the doctor.</p>	
3.	<p>In organisms, some changes pertain to body cells and are not inherited, whereas some changes pertain to germ cells and are inheritable.</p> <p>a) Name the two types of variations respectively.</p> <p>b) Explain two ways by which individuals with a particular trait may increase in a population.</p>	5
4.	<p>A person cannot see objects nearer than 75 cm but can clearly read the banners placed on the roadside from a distance.</p> <p>a) Name the defect of vision he is suffering from.</p> <p>b) List two causes of this defect of vision.</p> <p>c) How can it be corrected?</p> <p>d) Draw ray diagrams showing the (i) defective eye (ii) corrected eye.</p>	5
5.	<p>What is dispersion of white light? State its cause. Draw a labelled diagram to show dispersion of white light by a glass prism. How will you use two identical glass prisms to obtain white light? Draw ray diagram to illustrate it.</p>	5
6.	<p>a) What is meant by biodiversity? List two advantages of conserving forest and wild life.</p> <p>b) Why is government of India imposing a ban on the use of polythene bags?</p> <p>c) Suggest two alternatives to these bags and explain how this ban is likely to improve the environment.</p>	5

### PRACTICAL BASED QUESTIONS

VSA: (1 marks each)

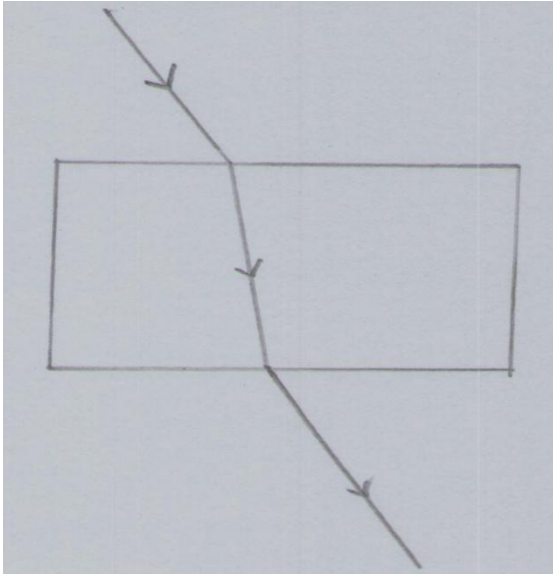
1.	<p>For preparing soap in the lab, the oil that a student will not select is-</p> <p>A) Cottonseed Oil</p> <p>B) Coconut Oil</p> <p>C) Kerosene Oil</p> <p>D) Mustard Oil</p>	1
2.	<p>Two test tubes A and B contain soft water and hard water respectively. A few drops of soap solution is added to each. It is observed that-</p> <p>A) Lather is produced in A and not B</p> <p>B) Lather is produced in B and not A</p> <p>C) Lather is neither produced in A nor B</p> <p>D) Lather is produced in both A and B</p>	1

3.	<p>A student finding the focal length of a given concave mirror, obtains the image of a distant tree on the screen with respect to the object, the image will be-</p> <p>A) Diminished and erect          B) Diminished and inverted          C) Enlarged and erect          D) Enlarged and inverted</p>	1
4.	<p>During an experiment to find out the focal length of convex lens a student got a clear image of a test object at a far distance on the screen but he did some mistake in making measurement as shown in the diagram. The mistake is—</p>  <p>A) Distance of screen from object was not measured          B) Object distance was not measured          C) Lens was not adjusted properly          D) Distance of image was not measured from the optical centre of the lens</p>	1
5.	<p>Four students traced the path of light ray through a glass prism. The student who has traced the path correctly is-</p>  <p>A) I          B) II          C) III          D) IV</p>	1

<p>6.</p>	<p>The correct position of eye for observing the emergent ray in the experiment with glass slab is</p>  <p>A) A B) B C) C D) D</p>	<p>1</p>
<p>7.</p>	<p>While drawing the ray diagram for the formation of image by a convex lens, a student made a mistake and was unable to draw the correct diagram. The possible mistake could be-</p> <p>i.) Line showing parallel to principal axis was not exactly parallel ii.) The focal points might not have been marked at equal distance on either side of the lens iii.) The line through the focus may not be of the correct slope. iv.) The location of the intersection of two lines cannot be determined with complete accuracy.</p> <p>Out of the above, the probable mistake(s) could be-</p> <p>A) Only (i) B) Only (ii) C) Only (iii) and (iv) D) All are possible</p>	<p>1</p>
<p>8.</p>	<p>The wings of birds and arm of human beings are homologous as –</p> <p>A) Both are structurally similar but dissimilar in function. B) Both are modifications of skin. C) Both are structurally dissimilar but functionally similar. D) Both are modification of hind limbs.</p>	<p>1</p>
<p>9.</p>	<p>A typical dicotyledonous embryo consists of</p> <p>A) Epicotyls, hypocotyls, plumule. B) Embryonal axis, two cotyledons C) Embryonal axis, hypocotyls D) Cotyledons, plumule</p>	<p>1</p>

## PRACTICAL BASED QUESTIONS

SA: (2 marks each)

1.	A student wants to test a given solution for ethanoic acid. He picks up some sodium carbonate and strip of blue litmus paper. What would his observations be if the given solution was ethanoic acid.	2
2.	<p>A student traces the path of ray of light through a rectangular glass slab , as follows , but eaves it unlabelled and incomplete.</p>  <p>Redraw the complete diagram and label in it</p> <ul style="list-style-type: none"><li>i) Angle of incidence <math>\angle i</math></li><li>ii) Angle of refraction <math>\angle r</math></li><li>iii) Angle of emergence <math>\angle e</math></li><li>iv) Lateral displacement</li></ul>	2
3.	A child observed a permanent slide fixed under a microscope. He concluded that the slide shows binary fission in amoeba. Write any two observations he must have made to arrive at this conclusion.	2