

HOLIDAYS HOMEWORK

SUMMER BREAK 2018-19

CLASS XB CBSE

SUBJECT: Science

BIOLOGY

Answer the following questions:

- Q1. What is saliva ? What are its two important functions?
- Q2. Small intestine is an ideal place for absorption process to happen in human alimentary canal, why? What all gets absorbed from there?
- Q3. How would digestion process be affected if pancreatic duct opening in small intestine gets blocked?
- Q4. How is nutrition in 'bread mold' different from nutrition in 'tapeworm'? Give two differences.
- Q5. Why is pyruvate an important component in cellular respiratory process?
- Q6. Why is small intestine in herbivores longer than in carnivores?
- Q7. Leaves of a healthy potted plant were coated with Vaseline. Will this plant remain healthy for long? Give reasons for your answer.
- Q8. What process is helpful in movement of food along the alimentary canal from mouth to esophagus?
- Q9. (a) In which form excess glucose molecule is stored as reserve food in animals? (b) In which form excess glucose molecule is stored as reserve food in plants?
- Q10. Why is trachea supported by cartilaginous rings? We tell children not to eat too many chocolates. How would you explain to them the reaction by which their teeth are getting damaged?
- Q11. Respiration is a process of producing energy by the oxidation of food. Human respiratory system provides oxygen to the blood for further supply to the all cells of the body
- (a) Why some people experience difficulty in breathing?
- (b) What steps should be taken to avoid such problem?
- Q12. Name the digestive gland present in the human buccal cavity. Name its secretion.

PROJECTS:

1. Causing and weather shipping are innovative ways of waste reduction. Investigate and prepare flash cards showing two techniques
2. “ mashable.com” Visit the website, get ideas about urban garden on wheels and prepare a model (Car Oasis)

or

Water conservation in ancient times helped civilizations to survive. They used many ways to conserve water and the methods were multipurpose. Investigate, collect information and prepare a model on any one of the following:-

- Ahar pynee
 - Panam Keni
 - iii) Step wells in Gujarat (Adalaj)
 - Bhandana Phad
 - Zing
 - Zabo
 - (vii) Jackwells etc
3. Water purifying bacteria are used in many industries to keep their waterbodies clean. Prepare an investigatory project on “Bacteria used in waste water management”.

Or

Prepare an investigatory project on “Vertical forests – Remove smog”.

The projects should be handwritten on A4 size pages and should contain at least 20-25 pages. The report should be presented in the following order: a) Cover page including Title of project, student information, name of the school and academic session b) Acknowledgements c) Chapters with relevant headings d) Summary and conclusion e) Bibliography.

All photographs and sketches should be labelled and acknowledged.

Credits will be awarded to original drawings and illustrations.

Prepare a visually appealing and informative scrap book with coloured pictures, flowcharts, diagrams showing a timeline of evolution of the following:

Homo sapiens from reptiles, birds from reptiles, reptiles from amphibians, vertebrates from invertebrates, origin of the cauliflower, angiosperms from bryophytes.

The scrapbook should include the a) Title “Evolution”, student information, name of the school and academic session b) Acknowledgements c) Chapters with relevant headings d) Summary and conclusion e) Bibliography.

All photographs and sketches should be labelled and acknowledged.

Credits will be awarded to original drawings and illustrations.

CHEMISTRY

CHAPTER-1

- Give reasons for the following:
 - Keeping food in air tight containers help in preventing rancidity.
 - Moist air and acidic gases are not good for some metals.
 - Manufactured chips usually flush bags of chips with nitrogen gas.
 - White colored silver chloride turns gray when kept in sunlight.
- When a green iron salt is heated strongly its colour finally changes to black and odour of burning sulphur is given out.
 - Name the iron salt.
 - Name the type of reaction that take place.
 - Name the compound which changes into Brownish black colour.
 - Name the compound which is responsible for its odour.
 - Write the chemical equation of the above statement.
- A chemical is heated in a test tube brown fumes comes out and a black residue is left behind.
 - Name the chemical which gives brown fumes.
 - Write the equation.
 - Name the compound which gives black residue.
- Give one example of decomposition reaction which is carried in the presence of (i) Electrical energy (ii) Sun light (iii) Heat energy
- Give two examples of everyday life situations where redox reaction are taking place.
- Why does the blue colour of copper sulphate solution change when a piece of iron dropped into it?
- State any two ways to prevent the rancidity of food containing fats and oil?
- Why respiration is exothermic reaction?
- What type of reaction is represented by the digestion of food in our body?
- When ammonium hydroxide solution is added to aluminium chloride, a white ppt. of aluminium hydroxide is formed along with ammonium chloride solution what type of chemical reaction is stated in the above chemical change.
- In the refining of silver, the recovery of silver from silver nitrate solution involves displacement reaction with copper metal. Write down the chemical equation for the reaction.
- What do you observe when a solution of lead nitrate and potassium iodide in water are mixed together?
- A white substance 'X' on exposure to sunlight turns grey. Name the substance 'X' and the grey product.
- What would you observe when lead nitrate is heated?
- When hydrogen gas is passed over a black substance 'X', the black coating turns brown due to (i) oxidation (ii) reduction.
- Define Rancidity.
- What are oxidising agents?
- Write balanced equations with state of reactants and products
 - Molten sodium chloride on passing current decomposes into sodium metal and chlorine gas
 - Magnesium metal and hydrochloric acid react to product magnesium chloride and hydrogen
 - Potassium chlorate on heating produces potassium chloride and oxygen gas.
 - Solutions of barium chloride and sodium sulphate react to produce ppt. of barium sulphate and sodium chloride.
 - Iron metal dissolves in copper sulphate solution forming iron sulphate and copper.
- . What happens when magnesium ribbon burns in air?

20. Name the gas evolved when zinc reacts with dil. HCl.
21. What is a chemical equation?
22. On what chemical law, balancing of chemical equation is based?
23. Represent decomposition of ferrous sulphate with the help of balanced chemical equation.
24. When carbon dioxide is passed through lime water, it turns milky, why?
25. A zinc rod is left for nearly 20 minutes in a copper sulphate solution. What change would you observe in zinc rod? Ans. Zinc rod will change into zinc sulphate.
26. What type of reaction is this: $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \text{ GIVES } \text{BaSO}_4 + 2\text{NaCl}$
27. Identify the compound oxidized in the following reaction. $\text{H}_2\text{S} (\text{g}) + \text{Cl}_2 (\text{s}) \rightarrow 2\text{HCl} (\text{g})$
28. What is rust?
29. How does the food become rancid?
30. An iron knife kept dipped in a blue copper sulphate solution turns the blue solution light green. Why?
31. A copper coin is kept in a solution of silver nitrate for some time. What will happen to the coin and the colour of the solution?
32. What do you understand by precipitation reaction? Explain with suitable examples.
33. What is lime-water test for the detection of carbon dioxide?
34. What is corrosion? State the conditions necessary for rusting of iron. How rusting is harmful?
35. What is rancidity? Write the common method to prevent it.
36. Why cannot a chemical change be normally reversed? b. why is it always essential to balance a chemical equation? c. what happens when CO_2 gas is passed through lime water and why does it disappear on passing excess CO_2 ? d. Can rusting of iron takes place in distilled water?
37. The marble statues often slowly get corroded when kept in open for a long time .Assign a suitable explanation
38. You are given the following materials (a) marble chips (b) dilute hydrochloric acid (c)Zinc granules Identify the type of reaction when marble chips and Zinc granules are added separately to acid taken in two test tubes.
39. The gases hydrogen & chlorine do not react with each other even if kept together for a long time . However, in the presence of sunlight, they readily combine. What does actually happen?
40. Ahmad took a magnesium ribbon (cleaned) and burned it on a flame. The white powder formed was taken in a test tube and water was added to it. He then tested the solution formed with red and blue litmus paper. What change was seen? Why?
41. Give one example of a combination reaction in which an element combines with a compound to give you a new compound. A

CHAPTER -2

1. Name two organic acids.
2. How does baking powder differ from baking soda?
3. What will happen if heating is not controlled while preparing plaster of Paris.
4. A housewife found that the cake prepared by her is hard and small in size. Which ingredient has she forgotten to add that would have made the cake fluffy. Give reason.
5. What is water of crystallization? Name two hydrated salts.
6. What happens when an acid reacts with a base? Give equation of the reaction of the reaction involved. What is the special name of this reaction?
7. Explain how pH change in the river water can endanger the lives of aquatic animals.
8. A baker found that the cake prepared by him is hard and small in size. Which ingredients has he forgotten to add that would have caused the cake to rise and become light?
9. What are the two main ways in which common salt (sodium chloride) occurs in nature? How is common salt obtained from sea water? Explain.

10. What happens when (a) Solid sodium hydrogen carbonate is heated, (b) Chlorine gas is passed through dry slaked lime, (c) Gypsum is heated to a temperature of 373 K?
11. (i) What is a salt? (ii) Why aqueous solution of sodium carbonate is basic in nature? (iii) Why is an aqueous solution of ammonium chloride acidic in nature?
12. A milkman adds a very small amount of baking soda to fresh milk.
13. Why do acids not show acidic behavior in the absence of water?
14. Alcohols and Glucose contain hydrogen but are not categorized as acids.
15. Plaster of Paris should be stored in a moisture-proof container. Explain why?
16. Why is calcium sulphate hemihydrates called 'Plaster of Paris'?
17. Equal lengths of the magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid (CH₃COOH) is added to test tube B. In which test tube will the fizzing occur more vigorously and why?
18. Name a solution reacts with crushed egg-shells to give a gas that lime-water milky.
19. Why does distilled water not conduct electricity, whereas rain water does?
20. What is aqua-regia?
21. Name the sodium compound which is used for softening hard water.
22. Why should curd and sour substances not be kept in brass and copper vessels?
23. What is efflorescence?
24. What are the components of baking powder?

PHYSICS

LIGHT – REFLECTION AND REFRACTION ASSIGNMENT QUESTIONS

1. Define the principal focus of a concave mirror.
2. The radius of curvature of a spherical mirror is 20 cm. What is its focal length?
3. Name a mirror that can give an erect and enlarged image of an object.
4. Why do we prefer a convex mirror as a rear-view mirror in vehicles?
5. Find the focal length of a convex mirror whose radius of curvature is 32 cm.
6. A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located?
7. A ray of light travelling in air enters obliquely into water. Does the light ray bend towards the normal or away from the normal? Why?
8. Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass? The speed of light in vacuum is $3 \times 10^8 \text{ m s}^{-1}$.
9. The refractive index of diamond is 2.42. What is the meaning of this statement?
10. Define 1 dioptre of power of a lens.
11. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also, find the power of the lens.
12. Find the power of a concave lens of focal length 2 m.
13. Define refraction.
14. Define refractive index.
15. What is the unit of refractive index?
16. List out the factors on which the refractive index of a medium depends.
17. Define angle of incidence.
18. What is the angle of incidence if a ray of light is incident normal to the surface separating the two media?
19. What is a lens?
20. What is a concave lens?
21. What is the nature of the focus of a concave lens?

22. What type of image is formed by a concave lens?
23. A thin lens has a focal length $f = -12$ cm. Is it convex or concave lens?
24. A lens forms an erect image for all positions of the object in front of it. Is the lens convex or concave?
25. Where should an object be placed so that a real and inverted image of same size is obtained using a convex lens?
26. Write the relation between u, v and f of a thin lens.
27. What is the sign of u, v and f for a convex lens according to Cartesian sign convention?
28. An object of height 1m is placed at a distance of $2f$ from a convex lens. What is the height of the image formed?
29. Define power.
30. What is least distance of distinct vision?
31. What happens when a ray of light passes through the optical centre of a lens?
32. State the laws of refraction.
33. Diagrammatically represent the refraction of light through a rectangular glass slab.
34. Define convex lens. Why is it referred to as converging lens?
35. Draw a diagram to show the second principal focus of a convex lens.
36. Distinguish between a convex and a concave lens.
37. Draw a ray diagram to show the refraction of light when it passes through the optic centre of a convex lens.
38. List out the uses of convex lenses.
39. With the help of a ray diagram show how an object gets magnified in a simple microscope.
40. Define the power of a lens. What is its unit?
41. With the help of a diagram explain how light gets refracted when it passes through a rectangular glass slab.
42. An object is placed at a distance of 50 cm from a concave lens of focal length 20 cm. Find the nature and position of the image.
43. An object is placed 50 cm from a lens which produces a virtual image at a distance of 10 cm in front of the lens. Draw a diagram to show the formation of image and calculate the focal length of the lens.
44. A convex mirror used for rear-view on an automobile has a radius of curvature of 3.00 m. If a bus is located at 5.00 m from this mirror, find the position, nature and size of the image.
45. An object, 4.0 cm in size, is placed at 25.0 cm in front of a concave mirror of focal length 15.0 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image? Find the nature and the size of the image.
46. A concave lens has focal length of 15 cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens? Also, find the magnification produced by the lens.
47. A 2.0 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 10 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image. Also find its magnification.
48. An object of height 4 cm is placed at a distance of 10 cm from a convex lens of focal length 20 cm. Find the position, nature and size of the image.
49. What is the power of a lens having a focal length of a) 50 cm b) -50cm
50. Draw a ray diagram to show the position and nature of the image formed by a convex lens when the object is placed a) at $2F_1$ b) between F_1 and $2F_1$ c) beyond $2F_1$.
51. State and verify Snell's law.
52. How can an inverted image of an object be obtained with a plane mirror?
53. How many images of himself can an observer see in a room whose ceiling and two adjacent walls are mirrors?
54. A convex mirror is held in water. What should be the change in its focal length?
55. If the light from the Sun subtend an angle Q at the pole of a concave mirror of focal length f , where will it converge? Also find the diameter of the image. Draw the necessary ray diagram.
56. When does Snell's law of refraction fail? How does the frequency of a beam of ultraviolet light changes when it goes from air to glass?
57. State two conditions under which a ray of light suffering refraction from medium 1 to medium 2 does not undergo any change in direction

58. Name the factor on which lateral shift produced by glass slab depends?
59. A glass lens is immersed in water. How is the power of the lens affected?
60. Why is the power of a lens is measured as reciprocal of focal length? Give reason.
61. A convex lens is made of a material of refractive index m_1 when placed in a medium of refractive index m_2 , behaves as a diverging lens. How are m_1 and m_2 related?
62. An object is held at a distance of 60 cm from a convex mirror of focal length 20 cm. At what distance from the mirror, should a plane mirror be held so that images in the two mirrors coincide?(ans. 22.5 cm)
63. How do you find the rough focal length of a convex lens? Is the same method applicable to a concave lens?
64. Which factors determines the focal length of a lens?
65. The formula for linear magnification of a spherical mirror is $m=h'/h = -v/u$. What determines the sign of m ? What is the significance of this sign?
66. A convex lens made of material of refractive index n_2 is kept in a medium of refractive index n_1 . A parallel beam of light is incident on the lens. Compare the path of rays of light emerging from the convex lens if (i) $n_1 < n_2$ (ii) $n_1 = n_2$ (iii) $n_1 > n_2$
67. A concave lens of focal length 25 cm and a convex lens of focal length 20 cm are placed in contact with each other. What is the power of this combination? Also, calculate focal length of this combination. (ans. 1m)
68. A convergent lens of power 8D is combined with a divergent lens of power -10 D. Calculate focal length of the combination. (ans.-0.5 m)
69. A concave lens has a focal length of 15 cm. At what distance should an object from the lens be placed so that it forms an image at 10 cm from the lens? Also find the magnification of the lens.
70. Under what condition in an arrangement of two plane mirrors, incident ray and reflected ray will always be parallel to each other, whatever be the angle of incidence? Show the same with the help of diagram.
71. How much time will light take to cross 2 mm thick glass pane if refractive index of glass is $3/2$? (ans. 10-11s).
72. Light travel from rarer medium 1 to a denser medium 2. The angle of incidence and refraction are respectively 45° and 30° . Calculate the refractive index of second medium with respect to the first medium.
73. A pond of depth 20 cm is filled with water of refractive index $4/3$. Calculate apparent depth of the tank when viewed normally.
74. What is the real depth of a swimming pool when its bottom appears to be realized by 1m? given refractive index of water is $4/3$.
75. An object is placed in front of a concave mirror of radius of curvature 15cm at a distance of (a) 10cm. and (b) 5cm. Find the position, nature and magnification of the image in each case.
76. An object is placed 15cm from a concave mirror of radius of curvature 60 cm. Find the position of image and its magnification?
77. An object is kept at a distance of 5cm in front of a convex mirror of focal length 10cm. Give the position, magnification and the nature of the image formed.
78. An object is placed at a distance of 50cm from a concave lens of focal length 20cm. Find the nature and position of the image.
79. The power of a lens is 2.5 diopetre. What is the focal length and the type of lens?
80. What is the power of a concave lens of focal length 50cm?
81. Find the power of a concave lens of focal length 2m.
82. Two lens of power +3.5D and -2.5D are placed in contact. Find the power and focal length of the lens combination.
83. A convex lens has a focal length of 20 cm. Calculate at what distance from the lens should an object be placed so that it forms an image at a distance of 40cm on the other side of the lens. State the nature of the image formed?
84. A 10cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 30cm. The distance of the object from the line is 20cm.find the i)position ii)nature and iii) size of the image formed.
85. Find the focal length of a line power is given as +2.0D.

86. With respect to air the refractive index of ice and rock salt benzene are 1.31 and 1.54 respectively. Calculate the refractive index of rock salt with respect to ice.
87. An object 5cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30cm. Find the position of the image, its nature and size.
88. The far point of a myopic person is 150cm in front of the eye. Calculate the focal length and the power of the lens required to enable him to see distant objects clearly.
89. An object is placed in front of a concave mirror of radius of curvature 15cm at a distance of (a) 10cm. and (b) 5cm. Find the position, nature and magnification of the image in each case.
90. An object is placed 15cm from a concave mirror of radius of curvature 60 cm. Find the position of image and its magnification?
91. An object is kept at a distance of 5cm in front of a convex mirror of focal length 10cm. Give the position, magnification and the nature of the image formed.
92. An object is placed at a distance of 50cm from a concave lens of focal length 20cm. Find the nature and position of the image.
93. The power of a lens is 2.5 dioptre. What is the focal length and the type of lens?
94. What is the power of a concave lens of focal length 50cm?
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99. Find the focal length of a line power is given as +2.0D.
100. With respect to air the refractive index of ice and rock salt benzene are 1.31 and 1.54 respectively. Calculate the refractive index of rock salt with respect to ice.
101. An object 5cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30cm. Find the position of the image, its nature and size.
102. The far point of a myopic person is 150cm in front of the eye. Calculate the focal length and the power of the lens required to enable him to see distant objects clearly.
103. Which one of the following materials cannot be used to make a lens?
(a) Water (b) Glass (c) Plastic (d) Clay
104. The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should be the position of the object?
(a) Between the principal focus and the centre of curvature (b) At the centre of curvature
(c) Beyond the centre of curvature (d) Between the pole of the mirror and its principal focus.
105. Where should an object be placed in front of a convex lens to get a real image of the size of the object?
(a) At the principal focus of the lens (b) At twice the focal length (c) At infinity
(d) Between the optical centre of the lens and its principal focus.
106. A spherical mirror and a thin spherical lens have each a focal length of -15 cm. The mirror and the lens are likely to be
(a) both concave. (b) both convex. (c) the mirror is concave and the lens is convex.
(d) the mirror is convex, but the lens is concave.
107. No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be
(a) plane. (b) concave. (c) convex. (d) either plane or convex.
108. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?
(a) A convex lens of focal length 50 cm. (b) A concave lens of focal length 50 cm.
(c) A convex lens of focal length 5 cm. (d) A concave lens of focal length 5 cm.

- 109.** We wish to obtain an erect image of an object, using a concave mirror of focal length 15 cm. What should be the range of distance of the object from the mirror? What is the nature of the image? Is the image larger or smaller than the object? Draw a ray diagram to show the image formation in this case.
- 110.** Name the type of mirror used in the following situations.
(a) Headlights of a car. (b) Side/rear-view mirror of a vehicle. (c) Solar furnace.
Support your answer with reason.
- 111.** One-half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Verify your answer experimentally. Explain your observations.
- 112.** An object 5 cm in length is held 25 cm away from a converging lens of focal length 10 cm. Draw the ray diagram and find the position, size and the nature of the image formed.
- 113.** A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object placed from the lens? Draw the ray diagram.
- 114.** An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position and nature of the image.
- 115.** The magnification produced by a plane mirror is +1. What does this mean?
- 116.** An object 5.0 cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30 cm. Find the position of the image, its nature and size.
- 117.** An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focused image can be obtained? Find the size and the nature of the image.
- 118.** Find the focal length of a lens of power -2.0 D. What type of lens is this?
- 119.** A doctor has prescribed a corrective lens of power $+1.5$ D. Find the focal length of the lens. Is the prescribed lens diverging or converging?