

**DELHI PUBLIC SCHOOL JAMMU**

**PREBOARD-1 ASSIGNMENT (2019-20)**

**SUB-SCIENCE**

**CLASS-X**

1. The basic cause of refraction is the change in the speed of light in going from 1 medium to another. For example when a ray of light travelling in air enters into glass the speed of light decreases. Therefore bending of light occurs at the interface of air and glass. Similarly when the ray of light travelling in glass enters into air the speed of light increase. Therefore refraction of light occurs at the inferface of glass and air. Further the angle of bending of a ray would depend upon the difference in speeds of light in the two medium. Larger the difference in speed of light greater will be the angle of bending and viceversa. For example light will bend through larger angle in going from air to glass then in going from air to water. The speed of light in air is  $3 \times 10^8$  m/s and speed of light in glass is  $2 \times 10^8$  m/s whereas speed of light in water is  $2.25 \times 10^8$  m/s.

1a. What is the basic cause of refraction?

1b. What happens when a ray of light travelling in glass enters into air?

1c. On which principle does the angle of bending depends.

1d. Why will the light bends to a larger angle when moving from air to glass then in going from air to water.

2. Image obtained on screen is;

(a) Virtual      (b) both real and virtual      (c) real      (d) none of these

OR

The colour of light which is deviated the least by a prism in the spectrum of white light is;

(a) Red      (b) Green      (c) Violet      (d) Yellow

3. An electric bulb is rated 220V and 100 Watt when it is operated on 110 V. the power consumed will be

(a) 100 Watt      (b) 75 Watt      (c) 50 Watt      (d) 25 Watt

4. Which one of following terms does not represents electric power in a circuit

(a)  $I^2R$       (b)  $IR^2$       (c) VI      (d) VR

5. Assertion: Wind farms cannot be set at every place.

Reason: The velocity required for a windmill to function is about 15km/h.

(a) A      (b) B      (c) C      (d) D

6. Sodium carbonate is a basic salt because it is a salt of:

- a. Strong acid and strong base
- b. Weak acid and weak base
- c. Strong acid and weak base
- d. Weak acid and strong base

7. Why do silver ornaments turn black when exposed to air?

8. What is the natural source of oxalic acid?

9. What is anodizing?

10. Give an example of Dobereiner's triad.

**For question number 11 two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:**

- (i) If both the assertion and reason are true and reason is the correct explanation of assertion
- (ii) If both assertion and reason are true, but reason is not the correct explanation of assertion.
- (iii) If assertion is true but reason is false.
- (iv) If assertion is false but reason is true.

**11. Assertion:** Quick lime reacts vigorously with water releasing large amount of heat.

**Reason:** The above chemical reaction is an exothermic reaction.

## 12 ACID RAIN

Below is a photo of statues called Caryatids that were built on the Acropolis in Athens more than 2500 years ago. The statues are made of a type of rock called marble. Marble is composed of calcium carbonate. In 1980, the original statues were transferred inside the museum of the Acropolis and were replaced by replicas. The original statues were being eaten away by acid rain.



12a. Normal rain is slightly acidic because it has absorbed some carbon dioxide from the air.

Acid rain is more acidic than normal rain because it has absorbed gases like sulfur oxides and nitrogen oxides as well. Where do these sulfur oxides and nitrogen oxides in the air come from?

12b. A marble chip has a mass of 2.0 grams before being immersed in vinegar overnight. The chip is removed and dried the next day. What will the mass of the dried marble chip be?

- A. Less than 2.0 grams
- B. Exactly 2.0 grams
- C. Between 2.0 and 2.4 grams
- D. More than 2.4 grams

13. The autotrophic mode of nutrition requires

- (a) carbon dioxide and water.
- (b) chlorophyll.
- (c) sunlight.
- (d) all of the above

14. All green plants are \_\_\_\_\_.

15. All non-green plants and animals are \_\_\_\_\_.

16. Which part of the brain maintains posture and equilibrium of the body?

17. Give difference between conventional and non-conventional sources of energy

18(a) Explain the phenomenon of scattering of light. Also state the factors on which colour of scattered light depends.

(b) List the two natural phenomenon based on scattering of light.

19. A 4.5 cm needle is placed 24 cm away from a convex mirror of focal length 30 cm. Give the location of the image and its magnification.

OR

(a) State Snell's law of refraction. (b) The refractive index of diamond is 4.26 times. What is the meaning of this statement?

20. What is meant by electrolytic reduction? How is sodium obtained from its molten chloride? Explain.

21. Account for the following.

- a) Antacid tablets are used by a person suffering from stomach pain.
- b) Distilled water does not conduct electricity whereas rain water does.
- (c) Sodium hydroxide cannot be kept in aluminium containers

22. Write the limitations of Mendeleev's classification of elements.

23. What is transpiration? List its two functions.

- (a) What is translocation? Why is it essential for plants?
- (b) Where do the substances in plants reach as a result of translocation?

24. What is carpel? Write the function of its various parts.

25. (a) Why is the use of iodised salt advisable? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.

(b) How do nerve impulses travel in the body? Explain.

26. Explain the principle and construction of electric motor along with well labeled diagram.

27. At what distance from a concave lens of focal length 20 cm, should a 6 cm tall object be placed, so that it forms an image at 15 cm from the lens? Also determine the size of the image formed.

OR

28. Define dispersion and give its cause. Explain recombination of white light using two prisms.

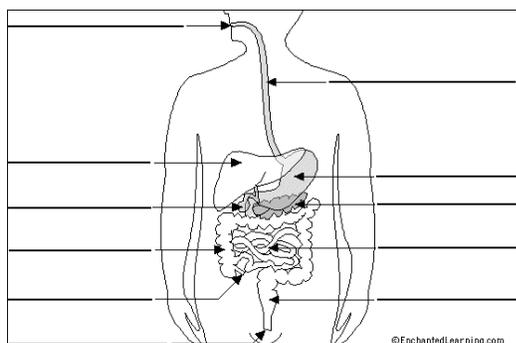
29. a) How is plaster of Paris chemically different from gypsum? How can they be interconverted? Write two uses of plaster of Paris.

b) What happens when an acid or a base is added to water. Why does the beaker appear warm?  
Why should we always add acid or base to water and not water to acid or a base?

30a) How is manganese extracted from manganese dioxide? Explain with the help of equation.

b) With the help of suitable example, explain how ionic compounds are formed? State any three general properties of ionic compounds.

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a). Identify any two parts from the above diagram

b). Explain the process of digestive system of human beings.

Q32. Will geographical isolation be a major factor in the speciation of a self-pollinating plant species? Why or why not?