

**SYLLABUS**

1. Heat
2. Acids Bases & Salts
3. Refraction of Light at Plane Surfaces
4. Refraction of Light At Curved Surfaces

**PHYSICAL SCIENCE**

**Class - 10**

Marks : 50

Time : 2.45 Hrs.

**Instructions :**

1. Answer all the questions in a separate answer booklet.
2. The question paper consists of 4 sections and 33 questions.
3. There is an internal choice in section - IV.
4. Write answers neatly and legibly.

**SECTION - I**

- Note: i) Answer all the questions.  
 ii) Each question carries 1/2 mark.

12 × 1/2 = 6 M

1. The process of converting solid into liquid is called .....
2. A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains .....
3. If refractive index of a denser medium is  $n_1$ , then its critical angle = .....
4. A sharp image of a distant object is obtained on a screen using a convex lens. In order to determine the focal length of a lens, we need to measure the distance between the .....
5. Which of the following molecular energies is a direct measure of temperature of a substance? ( )
 

A) Linear kinetic energy	B) Rotational kinetic energy
C) Vibrational kinetic energy	D) Potential energy
6. The salt whose aqueous solution will turn blue litmus to red is ( )
 

A) ammonium sulphate	B) potassium carbonate
C) sodium chloride	D) sodium acetate
7. Velocity of light in diamond, glass and water decreases in the following order. ( )
 

A) Water > Glass > Diamond	B) Diamond > Glass > Water
C) Diamond > Water > Glass	D) Water > Diamond > Glass
8. How will the image formed by a convex lens be affected if the upper half of the lens is wrapped with a black paper ( )
 

A) The size of the image is reduced to one - half	
B) The upper half of the image will be absent	
C) The brightness of the image is reduced	
D) There will be no effect	



9. Different gases are situated at same temperature. Which value remains same for all gases ?
10. Observe the box.

Substance	pH
Gastric	1.2
Washing Soda	12.8
Sea water	8.0
Beer	4.3
Milk	6.6

Which is the weak acid among them ?

11. Suresh's grand father underwent heart surgery. Doctor sent a tube to see the inner parts on computer. What tube it can be ?
12. What is the value of image distance ( $v$ ), if focal length ( $f$ ) is 20 cm and object distance ( $u$ ) is 30 cm is placed on the principal axis of convex lens?

### SECTION - II

Note: i) Answer all the questions.

ii) Each question carries 1 mark.

8 × 1 = 8 M

13. Why does ice float on water ?
14. Is it possible to add heat without changing the temperature of substance ? Mention the circumstances under which this happens.
15. Why pickles and sour substances are not stored in brass and copper vessels?
16. How does the clean cloth act, when it is kept with finely chopped onion in plastic bag ?
17. Why does a ray of light bend when it travels from one medium to another ?
18. What happens when a ray of light strikes the surface of separation between the two media at right angle ?
19. What is meant by focal plane ?
20. A convex lens is made of five different materials as shown in the figure. How many images does it form ? Why ?



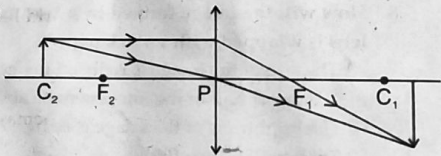
### SECTION - III

Note: i) Answer all the questions.

ii) Each question carries 2 marks.

8 × 2 = 16 M

21. In the given diagram discuss the image properties.



22. Can a virtual image be photographed by a camera ?
23. Why do stars appear twinkling ?
24. Why is it difficult to shoot a fish swimming in water ?
25. What is baking powder ? How does it make the cake soft and spongy ?
26. Fresh milk has a pH of 6. Explain why the pH changes as it turns into curd.
27. Three objects, A at  $30^{\circ}\text{C}$ , B at  $303\text{K}$  and C at  $420\text{K}$  are in thermal contact. Then answer the following questions.
- Which are in "Thermal equilibrium" among A, B and C ?
  - From which object to another heat is transferred ?
28. What would be the final temperature of a mixture of  $50\text{g}$  of water at  $20^{\circ}\text{C}$  temperature and  $50\text{g}$  of water at  $40^{\circ}\text{C}$  temperature ?

### SECTION - IV

- Note: i) Answer all the questions.  
ii) Each question carries 4 marks.  
iii) There is internal choice for each question.

$5 \times 4 = 20 \text{ M}$

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29. A) Write the differences between evaporation and boiling.

(OR)

- B) How do you find the focal length of a lens experimentally ?

30. A) Write an activity to show that the focal length of a lens depends on its surrounding medium.

(OR)

- B) List out the materials for the experiment "When hydrochloric acid reacts with  $\text{NaHCO}_3$  and evolves  $\text{CO}_2$ ". Write the experimental procedure.

31. A) How do optical fibres work? What are the various uses of optical fibres in our daily life?

(OR)

- B) Observe the following table and answer the questions given below.

The table contains the aqueous solutions of different substances with the same concentrations and their respective pH values.

Sample (solution) (Acid/ Base)	A	B	C	D	E	F	G	H
pH value	8.1	1.1	5.5	13.6	3.5	9.5	7	10

- Which one of the above acid solutions is the weakest acid? Give a reason.
  - Which one of the above solutions is the strongest base? Give a reason.
  - Which of the above two produce maximum heat when they react? What is that heat energy called?
  - Which one of the above solutions has the pH equal to that of the distilled water? What is the name given to solutions of that pH value?
32. A) Sometimes during the hot summer at noon time on tar roads, it appears that there is water on the road, but there would really be no water. What do you call this phenomenon? Explain why it happens.

(OR)

- B) A double convex lens has two surfaces of equal radii 'R' and refractive index  $n = 1.5$ . Find the focal length 'f'.
33. A) Draw a neat diagram showing acid solution in water conducts electricity.

(OR)

- B) Draw the ray diagrams to find the images when an object is placed in front of the lens (i) at a distance of 8 cm, and (ii) at a distance of 10 cm on the principal axis of a convex lens whose focal length is 4 cm. Write the characteristics of images in both the cases.