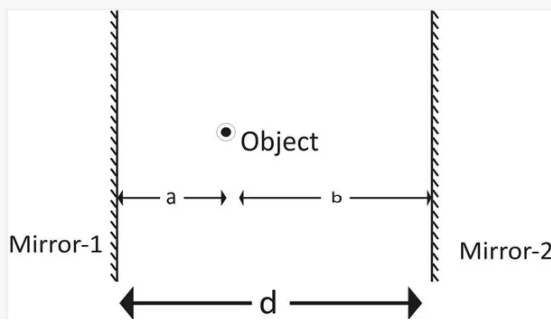


## APSK-SCIENCE-WS-X-2022

### PHYSICS

1. A light ray approaches a mirror at an angle of  $22^\circ$  with the mirror surface. What is the angle of reflection of this light ray?
2. A ray of light strikes a plane mirror, such that angle with the mirror is  $40^\circ$ . What is the value of angle of reflection? What is the angle between incident ray and reflected ray?
3. The angle of incidence for a ray of light having zero reflection angle is?
4. What is the number of images of an object held b/w two parallel plane mirrors?



5. What do you mean by lateral inversion in case of plane mirror?
6. An object is placed (i) 10cm, (ii) 5cm in front of a concave mirror of radius of curvature 15cm. Find position, nature and magnification of the image in each case. Draw ray diagram for it.
7. A concave mirror produces two times enlarged virtual images of an object placed 15cm away from the mirror. Find the focal length of the mirror. Also draw ray diagram for it.
8. A concave mirror of focal length 10cm is placed at a distance of 35cm from a wall. How far from the wall should an object be placed to get its image on the wall? Draw ray diagram for it.
9. When an object is placed at a distance of 60cm from a convex mirror, the magnification produced is  $1/2$ . Where should the object be placed to get a magnification of  $1/3$ ?
10. Draw ray diagram for concave when object placed at infinity, b/w C and F, b/w F and P
11. Light travels through water with a speed of  $2.25 \times 10^8$  m/s. What is the refractive index of water?
12. A ray of light passes from air to glass ( $n = 1.5$ ) at an angle of  $30^\circ$ . Calculate the angle of refraction.
13. The refractive index of diamond is 2.47 and that of glass is 1.51. How much faster does light travel in glass than in diamond?
14. A ray of light is travelling from air to water. What is the angle of incidence in air, if angle of refraction in water is  $45^\circ$ ? Take refractive index of water = 1.32.
15. What is the real depth of a swimming pool when its bottom appears to be raised by 1 m? Given refractive index of water is  $4/3$

## CHEMISTRY

- Write one difference between physical and chemical change. Why burning of a candle wax is considered as a chemical change?
- Identify the chemical change -
  - Fermentation of fruit juice
  - Melting of iron
  - Burning of wax
  - Dilution of fruit juice
- What is meant by skeletal type chemical equation? What does it represent? Using the equation for electrolytic decomposition of water, differentiate between a skeletal type chemical equation and balanced chemical equation.
- A small amount of quicklime is added to water in a beaker
  - Name and define the type of reaction that has taken place.
  - Write balanced chemical equation for the above reaction.
  - State two observations of the reaction.
- What change in colour is observed when white silver chloride is left exposed to sunlight? State the type of chemical reaction and write a balanced chemical equation, Mention one commercial use of this salt.
- On placing a pale yellow coloured substance in sunlight, it turns grey. The substance is used in black and white photography
  - Identify the brown and grey substances.
  - Identify the type of reaction and state the form of energy in the presence of which this reaction takes place.
- In the electrolysis of water:
  - Name the gas collected at the cathode and anode
  - Why is the volume of gas collected at one electrode double the other?
- A reddish brown coloured metal, used in electrical wires, when powered and heated strongly in an open china dish, its colour turns black. When hydrogen gas is passed over this black substance, it regains its original colour.
  - Name the metal and the black coloured substance formed.
  - Write balanced chemical equations for both the reactions.
- 2 g of lead nitrate powder is taken in a boiling tube and is heated over a flame.
  - State the colour of the fumes and the residue left.
  - Name the type of reaction and write a balanced chemical equation.
- 2 g of ferrous sulphate crystals are heated in a dry boiling tube.
  - List any two observations
  - Name the type of chemical reaction
  - Write the chemical equations
- When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.
  - What is the colour of the precipitate?
  - Name the compound precipitated.
  - Write a balanced chemical equation for this reaction
  - What type of reaction is this?

12. A solution of potassium chloride when mixed with silver nitrate solution; an insoluble white substance is formed. Identify the white substance. Write the chemical reaction and mention the type of chemical reaction.
13. A solution of sodium sulphate when mixed with barium chloride solution an insoluble substance or precipitate is formed.
- Write the colour of precipitate
  - Name the compound formed
  - Write the balanced chemical equation for the reaction.
  - What type of reaction is this?
14. Give reasons:
- Magnesium ribbon is cleaned before burning in air
  - Decomposition reactions are opposite of combination reactions
  - Photosynthesis is considered an endothermic reaction
  - Potato chips manufacturers fill the packets of chips with nitrogen gas
  - White coloured silver chloride turns grey when kept in sunlight.
  - All decomposition reactions are endothermic
  - Ammonium chloride is dissolved in water, the test tube turns cold.
  - Silver Chloride is stored in dark bottle.

## BIOLOGY

### SECTION-A

Answer very briefly

- \_\_\_\_\_ enzyme digests starch
- Which is the largest gland in the human body ?
- List a difference between pepsin and trypsin

### SECTION- B (3 mark questions )

4. Name the following :
- The process in plants that links light energy with chemical energy
  - Organisms that can prepare food on their own
  - The cell organelle where photosynthesis occurs
  - Cells that surround the stomatal pore
  - Organisms that cannot prepare their own food
  - An enzyme secreted from the gastric glands in the stomach that acts on proteins
5. How are alveoli designed to maximize the exchange of gases?
6. Answer as directed
- Write two water conducting tissues present in plants ? how does water continuously enter into the root system ?
  - Explain why plants have low energy needs as compared to animals
7. Answer as directed
- What is peristalsis ?
  - What will happen if the diaphragm of a person will get ruptured in an accident ?

8. How is aerobic respiration different from anaerobic respiration

**SECTION- C ( 5 marks )**

9. Describe the processes of urine formation in the kidneys

10. Draw a sectional view of the human heart and label the following

- (a) The chamber of the heart that pumps out deoxygenated blood
- (b) The blood vessel that carries away oxygenated blood from the heart
- (c) The blood vessel that receives deoxygenated blood from the lower part of our body
- (d) Part that prevents the backward flow of blood