Chapter - 5

Life Processes

Questions

1. During a fast sprint, muscle cells run short of oxygen. Pyruvate in these cells is then converted into

(a) lactic acid

(b) ethanol and carbon dioxide

(c) carbon dioxide and water

(d) glucose

☆ Asked : 2016, 2019, 2020, 2022, 2023, 2024, 2025, 2026 (1 mark)

2. To make bread, a baker mixes flour with water, sugar and a little yeast and leaves the dough in a warm place. The yeast breaks down the sugar without using oxygen. After about an hour the dough has risen and become soft and spongy. The same process, carried out on a large scale in sugar solutions, is used to produce alcohol.

(i) Name the type of respiration carried out by the yeast. [1]

(ii) Name the gas that makes the dough rise. [1]

(iii) Give two differences between the respiration in the yeast and the respiration in our cells when plenty of oxygen is available. [2]

OR

The gas from a flask of sugar solution and yeast is bubbled through lime water. What will be observed? Write the equation for the change.

☆ Asked : 2016, 2019, 2020, 2022, 2023, 2024, 2025, 2026 (4 marks)

kWh.

☆ Asked : 2020, 2022, 2024, 2026 (3 marks)

17. To measure the current through a resistor and the potential difference across it, the ammeter and the voltmeter must be connected with

(a) both in series with the resistor

(b) the ammeter in series and the voltmeter in parallel

(c) the ammeter in parallel and the voltmeter in series

(d) both in parallel with the resistor

☆ Asked : 2017, 2023, 2026 (1 mark)

18. (a) A wire of resistance 5 Ω is stretched uniformly to twice its length. What is its new resistance?
(b) Another wire of resistance 16 Ω is cut into four equal pieces, which are then joined in parallel. Find the equivalent resistance.

☆ Asked : 2020, 2024, 2025 (2 marks)

☆ Answers

1. (d) 10 A

$$I = \frac{P}{V} = \frac{2200}{220} = 10 \text{ A}$$

2. (a) In parallel the 100 W bulb (b) In series the 40 W bulb (about 20.4 W against 8.2 W)

Resistances: $R_1 = \frac{V^2}{P} = \frac{220^2}{100} = 484\ \Omega$;

$R_2 = \frac{220^2}{40} = 1210\ \Omega$ (1)

(a) In parallel each bulb gets 220 V and works at its

Extended backwards, they meet between F_1 and O on the object side, giving a virtual, erect, diminished image. (1)

(d) $P = \frac{1}{f} = \frac{1}{-0.15\ m} = -6.67$ D (about) (1)

6. (c) parallel to the incident ray but shifted sideways
The ray bends towards the normal on entering the glass and away from it by the same amount on leaving through the parallel face, so it comes out parallel to the incident ray with a sideways shift (lateral displacement).

7. About 1.24×10^8 m/s; diamond is optically denser

$n = \frac{c}{v}$, so $v = \frac{c}{n} = \frac{3 \times 10^8}{2.42}$ m/s $\approx 1.24 \times 10^8$ m/s (1)

Diamond has the larger refractive index (2.42 is more than 1.5), so it is optically denser than glass; light travels more slowly in it. (1)

OR $n \approx 1.73$

By Snell's law, $n = \frac{\sin i}{\sin r} = \frac{\sin 60°}{\sin 30°}$ (1)

$n = \frac{0.866}{0.5} \approx 1.73$ (1)

8. (a) Both A and R are true and R is the correct explanation of A.

Both are true. Light speeds up on entering the optically rarer medium (air), so it bends away from the normal; R explains A.

9. (i) When the candle was at 20 cm:
$2f = 2 \times 10$ cm $= 20$ cm, and the image was of the same size at $2F_2$.

Chapter - 2

Acids, Bases and Salts

Questions

1. Four solutions P, Q, R and S have pH 2, 6, 9 and 13 respectively. The solution with the highest concentration of hydrogen ions and the solution that is a strong alkali are

(a) S and P (b) Q and R
(c) P and R (d) P and S

Asked : 2019, 2020, 2022, 2023, 2024, 2025, 2026 (1 mark)

2. Meera tests six liquids with universal indicator paper and records their pH: A lemon juice 2.2, B distilled water 7.0, C soap solution 9.6, D dilute hydrochloric acid 1.0, E dilute sodium hydroxide solution 13.0, and F dilute acetic acid 2.9. Her teacher tells her that D and F were made with the same concentration of acid.

(i) Which liquid has the highest concentration of hydrogen ions? [1]

(ii) What colour will universal indicator show with liquid B? [1]

(iii) D and F have the same concentration of acid. Why is the pH of F higher than that of D? Which of the two is a strong acid? [2]

OR

Arrange A, B, C and E in increasing order of hydrogen ion concentration, and name the liquids among them that will turn red litmus blue.

Asked : 2019, 2020, 2022, 2023, 2024, 2025, 2026 (4 marks)