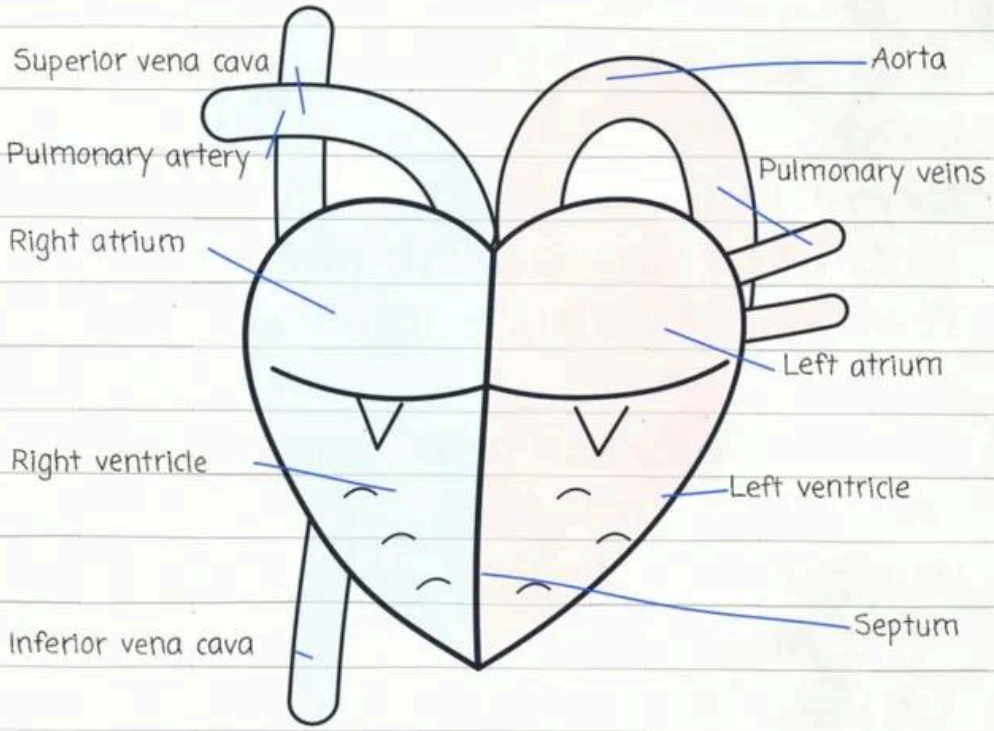
- Blood pressure is the force of blood on vessel walls. Normal about 120 over 80 mm of Hg (systolic over diastolic).

☆ Asked : 2018, 2019, 2022, 2023, 2024, 2025

The human heart



Human heart (simplified, front view): right side drawn on the left

Body (deoxygenated) —vena cava→ Right atrium

→ Right ventricle —pulmonary artery→ Lungs

pulmonary vein → Left atrium → Left ventricle

aorta → Body (oxygenated)

- Heart has 4 chambers: two atria (receive blood) and two ventricles (pump blood out).

Chapter - 4

Quadratic Equations

Most asked in boards

- Speed-distance-time word problems (plane delayed, train, boat in stream, return journey)
  - Asked : 2016, 2017, 2018, 2019, 2020, 2024, 2026 (3 to 5 marks)
- Solve a quadratic by factorisation (splitting the middle term) or by the quadratic formula
  - Asked : 2016, 2017, 2019, 2020, 2022, 2023, 2024 (1 to 4 marks)
- Nature of roots using the discriminant; find k for equal / real / no real roots
  - Asked : 2016, 2017, 2019, 2023, 2024, 2025 (1 to 5 marks)
- Area/geometry word problems (rectangle or right-triangle sides, two squares from area and perimeter, tiles)
  - Asked : 2016, 2017, 2019, 2024, 2025, 2026 (4 to 5 marks)
- Number, digit, reciprocal and marks word problems
  - Asked : 2017, 2019, 2022, 2023 (3 to 4 marks)

1. Standard form and roots

Quadratic equation : An equation that can be written as $ax^2 + bx + c = 0$, with a, b, c real and $a \neq 0$.

- A root (solution) is a value of x that makes the equation true.
- A quadratic has at most 2 roots.
- First bring everything to one side so the right side is 0.

History : Chapter 1

The Rise of Nationalism in Europe

⭐ Most asked in boards

- Liberalism and liberal nationalism: freedom of individual, government by consent, voting limits, free markets, Zollverein

  ⭐ Asked : 2016, 2017, 2019, 2020, 2022, 2023, 2024, 2025, 2026 (1 to 5 marks)

- Unification of Germany: Prussia, Bismarck, wars with Austria/Denmark/France, Kaiser proclaimed at Versailles 1871, Zollverein

  ⭐ Asked : 2016, 2017, 2019, 2020, 2022, 2023, 2024 (1 to 5 marks)

- Unification of Italy: Mazzini and Young Italy, Cavour, Garibaldi, Victor Emmanuel II, Sardinia-Piedmont, Venetia 1866

  ⭐ Asked : 2017, 2020, 2022, 2023, 2024, 2025 (1 to 2 marks)

- Conservatism after 1815: Congress of Vienna, Metternich, restoration of monarchies, censorship, balance of power

  ⭐ Asked : 2016, 2017, 2022, 2023, 2024 (1 to 3 marks)

- French Revolution and the idea of the nation: measures creating collective identity (tricolour, Estates General to National Assembly, anthem, uniform laws), spread of nationalism via Jacobin clubs and revolutionary wars

  ⭐ Asked : 2016, 2017, 2019, 2020, 2025 (1 to 5 marks)

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)

Chapter - 7

Coordinate Geometry

Questions

1. The ratio in which the x-axis divides the line segment joining (3, -6) and (5, 2) is

(a) 3 : 1 (b) 1 : 3

(c) 2 : 3 (d) 3 : 2

Asked : 2016, 2017, 2018, 2019, 2022, 2023, 2024, 2026 (1 mark)

2. Find the ratio in which the point P(x, 4) divides the line segment joining A(-2, 9) and B(6, 1). Also find the value of x.

OR

Find the ratio in which the point P(m, 6) divides the line segment joining A(-4, 3) and B(6, 8). Also find the value of m.

Asked : 2016, 2017, 2018, 2019, 2022, 2023, 2024, 2026 (3 marks)

3. If the distance between the points (2, -3) and (x, 5) is 10 units, then x is

(a) -8 or 4 (b) 8 or -4

(c) 8 or 4 (d) 6 or -6

Asked : 2016, 2017, 2019, 2020, 2022, 2024, 2025, 2026 (1 mark)

4. A point on the x-axis is at the same distance from A(7, 6) and from B(-3, 4). Find that point.

Asked : 2016, 2017, 2019, 2020, 2022, 2024, 2025, 2026 (2 marks)

Time : 3 hours, Marks : 80

Social Science: Practice Paper 1

- 38 questions. All are compulsory; some give you a choice (OR).
- Sit for 3 hours, no phone, no book. Then mark yourself with the answers.
- For the map questions use a blank outline political map of India (from any stationery shop).

Section A: History

1. Which of the following was started by Prussia in 1834 to remove tariff barriers among the German states?

(a) The Frankfurt Parliament
(b) The Zollverein (customs union)
(c) The German Confederation
(d) Young Europe

[1 mark]

2. Which event led Gandhi to call off the Non-Cooperation Movement in February 1922?

(a) The firing at Jallianwala Bagh
(b) The arrival of the Simon Commission
(c) A violent clash with the police at Chauri Chaura in Gorakhpur
(d) The Poona Pact

[1 mark]

9. If $\sin\theta = \frac{5}{13}$, where θ is an acute angle, then $\tan\theta$ is equal to

(a) $\frac{12}{13}$ (b) $\frac{5}{12}$

(c) $\frac{12}{5}$ (d) $\frac{13}{12}$

[1 mark]

10. If $2\cot\theta = 3$, then the value of $\frac{2\cos\theta - \sin\theta}{2\cos\theta + \sin\theta}$ is

(a) $\frac{1}{7}$ (b) 2

(c) $\frac{1}{2}$ (d) $\frac{3}{5}$

[1 mark]

11. A 6 m long ladder is placed against a vertical wall so that it makes an angle of 60° with the level ground. The height at which the top of the ladder touches the wall is

(a) 3 m (b) $6\sqrt{3}$ m

(c) $2\sqrt{3}$ m (d) $3\sqrt{3}$ m

[1 mark]

12. From an external point P, a tangent PT is drawn to a circle with centre O and radius 8 cm. If PT = 15 cm, then OP is

(a) 17 cm (b) 7 cm

(c) 23 cm (d) $\sqrt{161}$ cm

[1 mark]

2. Chemical equations

- Reactants are on the left, products on the right, joined by an arrow (→).

Symbol	Meaning
(s)	solid
(ℓ)	liquid
(g)	gas
(aq)	aqueous, dissolved in water
heat or Δ over the arrow	reaction needs heating
↑ and ↓	gas released, precipitate formed

- Law of conservation of mass : Mass is neither created nor destroyed in a reaction. So atoms of each element must be equal on both sides.

3. Types of chemical reactions

A. Combination reaction

- Combination reaction : Two or more reactants join to form one single product.

$$CaO(s) + H_2O(\ell) \rightarrow Ca(OH)_2(aq)$$
$$C(s) + O_2(g) \rightarrow CO_2(g)$$
$$2H_2(g) + O_2(g) \rightarrow 2H_2O(\ell)$$

quicklime + water gives slaked lime; coal burning and hydrogen burning are combination too

- Quicklime (CaO) reacts with water with a hissing sound and lots of heat.
- A reaction that gives out heat is exothermic. Burning of natural gas and respiration are exothermic.

Chapter - 11 (last-day revision)

Areas Related to Circles

First revise

- Arc length and perimeter of a sector or of a region bounded by arcs
- Shaded-region areas combining circles, semicircles and quadrants with other shapes
- Area of a sector; find the angle or radius from a sector area
- Circumference and area basics: ratios, wheel revolutions, equal perimeters

Be careful

- Using diameter as radius. Halve the diameter first.
- Perimeter of a sector is arc + two radii, not just the arc.

1. Circle basics

$$\text{Circumference} = 2\pi r = \pi d$$
$$\text{Area} = \pi r^2$$
$$\text{Ring (path) area} = \pi(R^2 - r^2)$$
$$= \pi(R + r)(R - r)$$

Use the value of π the question gives ($\frac{22}{7}$ or 3.14). If none is given, use $\frac{22}{7}$ when r is a multiple of 7

- Semicircle: area $\frac{1}{2}\pi r^2$, perimeter $\pi r + 2r$.

- Quadrant: area $\frac{1}{4}\pi r^2$, perimeter $\frac{1}{2}\pi r + 2r$.