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APPSC GROUP 1 · 1,000 TOPICS IN 100 DAYS

DAY 22
MCQs and explanations

Topics 211-220 · English

> 20 questions across 10 topics, with answer explanations and distractor analysis. Try all questions before reading the solutions.

211	Rowlatt Satyagraha and Jallianwala Bagh
212	SC/ST constitutional safeguards: rights issues and remedies
213	Economic growth and economic development: the difference
214	Food security: National Food Security Act and the PDS
215	Sex ratio and child sex ratio in India
216	Peninsular plateau: hills, plateaus and passes
217	Science in daily life: physics at home
218	Analogy: word, letter and number
219	Lines and angles: types and pairs of angles
220	Current affairs: the green ammonia project at Kakinada

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Topic 211
Rowlatt Satyagraha and Jallianwala Bagh

Day 22 · History & Culture | Unit A-6 · English

Practice questions

Q1 · Topic question 1

Consider the following statements about the Rowlatt Satyagraha and Jallianwala Bagh:

1. The all-India hartal against the Rowlatt Act was first fixed for 30 March 1919, and the date was then changed to 6 April 1919.
2. Saifuddin Kitchlew and Satyapal were arrested in Amritsar after the firing at Jallianwala Bagh.
3. Gandhi first used the expression “Himalayan miscalculation” at a public meeting in Ahmedabad.
4. The amendment of 2019 to the Jallianwala Bagh National Memorial Act, 1951 removed the President of the Indian National Congress from the trustees of the memorial.

Which of the statements given above is/are correct?

(1) 1 and 2 only

(2) 2 and 3 only

(3) 3 and 4 only

(4) 1 and 4 only

Q2 · Topic question 2

Match List I (Body) with List II (What it did or was):

List I (Body)	List II (What it did or was)
A. The Sedition Committee	1. Its majority found that Dyer's continued firing was "a grave error"
B. The Congress inquiry	2. Its report of 1918 was the basis of the law passed in March 1919
C. The Disorders Inquiry Committee	3. Had its headquarters in Bombay, from where its principal members were drawn
D. The Satyagraha Sabha	4. C.R. Das, Abbas Tyabji and M.R. Jayakar were among its members

(1) A-1, B-4, C-2, D-3

(2) A-2, B-4, C-1, D-3

(3) A-1, B-3, C-2, D-4

(4) A-2, B-3, C-1, D-4

Topic 212
SC/ST constitutional safeguards: rights issues and remedies

Day 22 · Constitution, Polity, Social Justice & IR | Unit B-5 · English

Practice questions

Q3 · Topic question 1

Match List I (Articles of the Constitution of India) with List II (what the Article provides):

List I (Article)	List II (What it provides)
A. Article 334	1. The claims of the members of the SCs and the STs are to be taken into consideration in making appointments to services and posts, consistently with the maintenance of efficiency of administration
B. Article 330	2. Seats are reserved for the SCs and the STs in the Legislative Assembly of every State
C. Article 335	3. Seats are reserved for the SCs and the STs in the House of the People
D. Article 332	4. The reservation of seats for the SCs and the STs is to cease to have effect after a fixed period from the commencement of the Constitution

(1) A-4, B-3, C-1, D-2

(2) A-1, B-3, C-4, D-2

(3) A-4, B-2, C-1, D-3

(4) A-1, B-2, C-4, D-3

Q4 · Topic question 2

Consider the following statements about the safeguards for the Scheduled Castes and the Scheduled Tribes:

1. While inquiring into a complaint that Scheduled Castes have been deprived of their rights and safeguards, the National Commission for Scheduled Castes has all the powers of a civil court trying a suit.
2. Under Article 341, the President may, by a later notification, add a caste to the list of Scheduled Castes already notified for a State.
3. Under the Prevention of Atrocities Act as it stands after the amendment of 2015, an Exclusive Special Court may take cognizance of an offence under the Act directly.
4. In Prathvi Raj Chauhan v. Union of India (2020), the Supreme Court held that the bar on anticipatory bail does not apply where the complaint does not make out a prima facie case under the Prevention of Atrocities Act.

Which of the statements given above is/are correct?

(1) 1, 2 and 3 only

(2) 2 and 4 only

(3) 1, 3 and 4 only

(4) 1 and 3 only

Topic 213
Economic growth and economic development: the difference

Day 22 · Indian & AP Economy and Planning | Unit C-1 · English

Practice questions

Q5 · Topic question 1

Consider the following statements about economic growth and economic development, as NCERT presents them:

1. According to NCERT Class XII, when an oil refinery pollutes a river and harms the fishermen who depend on it, GDP underestimates the welfare of the people.
2. In NCERT Class X's comparison of Haryana, Kerala and Bihar, the State with the highest per capita income does not have the lowest infant mortality rate.
3. NCERT Class X says that the developmental goals of different persons can be conflicting, so that what is development for one person may harm another.

Which of the statements given above is/are correct?

(1) 1 only

(2) 2 only

(3) 2 and 3 only

(4) 1, 2 and 3

Q6 · Topic question 2

Match List I (Measure or idea of development) with List II (Person linked with it):

List I (Measure or idea of development)	List II (Person linked with it)
A. Physical Quality of Life Index	1. Gro Harlem Brundtland
B. Human Development Index	2. Amartya Sen
C. Capability approach	3. Morris D. Morris
D. Sustainable development	4. Mahbub ul Haq

(1) A-3, B-4, C-2, D-1

(2) A-4, B-3, C-2, D-1

(3) A-3, B-4, C-1, D-2

(4) A-4, B-3, C-1, D-2

Topic 214
Food security: National Food Security Act and the PDS

Day 22 · Indian & AP Economy and Planning | Unit C-3 · English

Practice questions

Q7 · Topic question 1

Consider the following statements about the public distribution system and the National Food Security Act, 2013:

1. The Targeted Public Distribution System was launched in 1992.
2. Under the Act, a household under the Antyodaya Anna Yojana is entitled to 35 kg of foodgrains per person per month.
3. Under section 3 of the Act, the entitlement to subsidised foodgrains extends to up to 75 per cent of the rural population and up to 50 per cent of the urban population.
4. Schedule I of the Act set a lower issue price for rice than for wheat.

Which of the statements given above is/are correct?

(1) 1 and 2 only

(2) 3 only

(3) 2 and 4 only

(4) 1, 3 and 4

Q8 · Topic question 2

Match List I (Section of the National Food Security Act, 2013) with List II (What the section provides):

List I (Section of the National Food Security Act, 2013)	List II (What the section provides)
A. Section 4	1. A free meal for children from six months of age, through the anganwadi, and a free mid-day meal at school up to class VIII or the age of fourteen
B. Section 5	2. A free meal during pregnancy and for six months after childbirth, and a cash benefit of not less than Rs 6,000
C. Section 15	3. A body of a Chairperson, five other Members and a Member-Secretary, at least two of whom must be women
D. Section 16	4. An officer for each district to redress grievances, whose orders can be taken in appeal to the State Commission

(1) A-1, B-2, C-3, D-4

(2) A-1, B-2, C-4, D-3

(3) A-2, B-1, C-3, D-4

(4) A-2, B-1, C-4, D-3

Topic 215
Sex ratio and child sex ratio in India

Day 22 · Geography | Unit D-3 · English

Practice questions

Q9 · Topic question 1

Consider the following statements about the sex ratio in India:

1. In the 2011 Census, the lowest sex ratio among the Union territories was recorded in the National Capital Territory of Delhi.
2. Among the Censuses from 1901 to 2011, the lowest sex ratio was recorded in 1991.
3. Between the Censuses of 1991 and 2011, the overall sex ratio rose while the child sex ratio fell.
4. According to NCERT, the world population has on average 102 females per 100 males.

Which of the statements given above is/are correct?

(1) 1, 2 and 4 only

(2) 3 only

(3) 1, 3 and 4 only

(4) 2 and 3 only

Q10 · Topic question 2

In an illustrative district, the total population is 10,00,000, of whom 5,10,000 are males and 4,90,000 are females. There are 1,20,000 children in the age group 0 to 6, of whom 62,800 are boys. What is the child sex ratio of the district as the Census of India defines it?

(1) 911

(2) 961

(3) 1,098

(4) 1,911

Topic 216
Peninsular plateau: hills, plateaus and passes

Day 22 · Geography | Unit D-2 · English

Practice questions

Q11 · Topic question 1

Match List I (Hills or range) with List II (Where it lies, as the notes give it):

List I (Hills or range)	List II (Where it lies)
A. Anaimalai hills	1. North of the Palghat gap
B. Nilgiri hills	2. Northern Tamil Nadu
C. Velikonda range	3. South of the Palghat gap
D. Javadi hills	4. Northern Nellore district, down to the coastal plains

(1) A-3, B-1, C-4, D-2

(2) A-1, B-3, C-4, D-2

(3) A-3, B-1, C-2, D-4

(4) A-1, B-3, C-2, D-4

Q12 · Topic question 2

Consider the following statements about the Peninsular plateau:

1. The Chambal, the Betwa and the Ken, which drain the Central Highlands, flow from north-east to south-west.
2. The Malda fault separates the Meghalaya and Karbi Anglong plateau from the Chotanagpur plateau.
3. The Eastern Ghats are continuous and can be crossed through passes only.
4. The Aravali hills extend from Gujarat to Delhi in a south-west to north-east direction.

Which of the statements given above is/are correct?

(1) 1 and 2 only

(2) 3 and 4 only

(3) 2 and 4 only

(4) 1 and 3 only

Topic 217
Science in daily life: physics at home

Day 22 · Science & Technology | Item 18 · English

Practice questions

Q13 · Topic question 1

Consider the following statements about mirrors and lenses in daily life:

1. Vehicles use a concave mirror as the rear-view mirror because it always gives an erect, though diminished, image.
2. Concave mirrors are used in torches and vehicle headlights to get powerful parallel beams of light.
3. The lens in spectacles that correct myopia has a negative power.
4. The bottom of a pond containing water appears to be raised because of the refraction of light.

Which of the statements given above is/are correct?

(1) 1 and 3 only

(2) 1, 2 and 4 only

(3) 2, 3 and 4 only

(4) 2 only

Q14 · Topic question 2

Match List I (Device or everyday event) with List II (Physical principle it rests on):

List I (Device or everyday event)	List II (Physical principle it rests on)
A. Optical fibre	1. Cooling caused by the evaporation of water
B. Twinkling of stars	2. Refraction of light
C. Earthen pot (matka)	3. Keeping heat transfer by conduction, convection and radiation to a minimum
D. Thermos bottle	4. Total internal reflection of light

(1) A-2, B-4, C-1, D-3

(2) A-4, B-2, C-1, D-3

(3) A-4, B-2, C-3, D-1

(4) A-2, B-4, C-3, D-1

Topic 218
Analogy: word, letter and number

Day 22 · General Mental Ability: Reasoning & Psychological | Item 1 · English

Practice questions

Q15 · Topic question 1

Select the option that completes the analogy in the same way as the given pair: DGK : FJO :: RUW : ?

(1) TWY

(2) TXA

(3) SWZ

(4) AXT

Q16 · Topic question 2

Which of the following pairs is related in the same way as 7 : 50?

(1) 3 : 28

(2) 6 : 36

(3) 8 : 17

(4) 9 : 82

Topic 219
Lines and angles: types and pairs of angles

Day 22 · General Mental Ability: Quantitative & Data | Item 13 · English

Practice questions

Q17 · Topic question 1

The complement of an angle is 18 degrees more than five times the angle. What is the angle?

(1) 12°

(2) 18°

(3) 27°

(4) 78°

Q18 · Topic question 2

Two parallel lines l and m are cut by a transversal t, which meets l at P and m at Q. At P, the angle that lies between l and m on the right of t measures (2x + 25)°. At Q, the angle that lies between l and m on the right of t measures (3x + 5)°. What is the measure of the angle at P?

(1) 30°

(2) 65°

(3) 85°

(4) 95°

Topic 220
Current affairs: the green ammonia project at Kakinada

Day 22 · Current Affairs | CA-AP · English

Practice questions

Q19 · Topic question 1

Consider the following statements about green hydrogen and the policies that support it:

1. The Green Hydrogen Standard for India covers hydrogen produced from biomass as well as hydrogen produced by electrolysis.
2. Grey hydrogen is hydrogen made from natural gas with the carbon dioxide captured and stored.
3. Of the initial outlay of the National Green Hydrogen Mission, the largest share is for the SIGHT programme.
4. The Andhra Pradesh Integrated Clean Energy Policy 2024 sets the State a target of 5 million tonnes of green hydrogen a year.

Which of the statements given above is/are correct?

(1) 1, 2 and 4 only

(2) 3 only

(3) 2, 3 and 4 only

(4) 1 and 3 only

Q20 · Topic question 2

Match List I (terms) with List II (how each is made):

List I	List II
A. Green hydrogen	1. Made by electrolysis of water, using electricity from renewable energy
B. Green ammonia	2. Made by pyrolysis of methane
C. Pink hydrogen	3. Made by the Haber-Bosch process, using hydrogen produced from renewable sources
D. Turquoise hydrogen	4. Made by electrolysis of water, using electricity from nuclear energy

(1) A-3, B-1, C-4, D-2

(2) A-1, B-3, C-4, D-2

(3) A-3, B-1, C-2, D-4

(4) A-1, B-3, C-2, D-4

Answer key and explanations

Check your answers only after attempting all 20 questions.

Topic	Q1	Q2
211	Q1: (4)	Q2: (2)
212	Q3: (1)	Q4: (3)
213	Q5: (3)	Q6: (1)
214	Q7: (2)	Q8: (4)
215	Q9: (4)	Q10: (1)
216	Q11: (1)	Q12: (3)
217	Q13: (3)	Q14: (2)
218	Q15: (2)	Q16: (4)
219	Q17: (1)	Q18: (3)
220	Q19: (4)	Q20: (2)

Topic 211
Rowlatt Satyagraha and Jallianwala Bagh

Day 22 · History & Culture | Unit A-6 · English

Answer explanations

Q1 · Topic question 1

Q1. Answer: (4) 1 and 4 only

- Statement 1 is correct: Gandhi writes that the date of the hartal was first fixed for 30 March 1919 and then changed to 6 April. Delhi observed it on 30 March; the rest of India on 6 April.
- Statement 2 is wrong: Satyapal and Kitchlew were arrested and deported from Amritsar on 10 April 1919, three days before the firing of 13 April. Their arrest was one of the causes of the meeting, which was held partly to protest against their detention.
- Statement 3 is wrong: Gandhi went to Nadiad soon after a meeting in Ahmedabad, and it was at a public meeting in Nadiad that he first used the expression.
- Statement 4 is correct: the 2019 amendment removes the President of the Indian National Congress as a trustee. It also makes the leader of the single largest opposition party a trustee when there is no Leader of Opposition in the Lok Sabha.
- Why the other options are wrong: (1) includes statement 2, which is wrong, and leaves out statement 4. (2) includes statements 2 and 3, both wrong. (3) includes statement 3, which is wrong, and leaves out statement 1.

Q2 · Topic question 2

Q2. Answer: (2) A-2, B-4, C-1, D-3

- Why it is correct: The committee headed by Justice Rowlatt, the Sedition Committee, reported in 1918, and the Anarchical and Revolutionary Crimes Act was passed on its recommendations in March 1919 (A-2). C.R. Das, Abbas Tyabji and M.R. Jayakar were members of the Congress inquiry, with Gandhi, who drafted its report (B-4). The Disorders Inquiry Committee was the Hunter Committee; its majority found that Dyer's continued firing was "a grave error" (C-1). The Satyagraha Sabha drew its principal members from Bombay, so its headquarters were fixed there (D-3).
- Why (1) is wrong: It exchanges the two official committees. The report of 1918 was the Sedition Committee's; the finding of "a grave error" came from the Hunter Committee in 1920.
- Why (4) is wrong: It exchanges the two Indian bodies. C.R. Das, Abbas Tyabji and M.R. Jayakar were members of the Congress inquiry; the Bombay headquarters were the Satyagraha Sabha's.
- Why (3) is wrong: It makes both exchanges, the one in (1) and the one in (4).

Topic 212
SC/ST constitutional safeguards: rights issues and remedies

Day 22 · Constitution, Polity, Social Justice & IR | Unit B-5 · English

Answer explanations

Q3 · Topic question 1

Q1. Answer: (1) A-4, B-3, C-1, D-2

- A-4: Article 334 does not reserve seats itself. It fixes the period after which the reservation of seats for the SCs and the STs in the House of the People and the State Legislative Assemblies ceases: eighty years after the 104th Amendment, that is, up to 25 January 2030.
- B-3: Article 330 reserves seats for the SCs and the STs in the House of the People (Lok Sabha).
- C-1: Article 335 is the service safeguard: the claims of SC and ST members are to be taken into consideration "consistently with the maintenance of efficiency of administration".
- D-2: Article 332 reserves seats for the SCs and the STs in the Legislative Assembly of every State.
- Why the other options are wrong: (2) exchanges A and C, giving the efficiency rule to Article 334 and the fixed period to Article 335. (3) exchanges B and D, putting the Lok Sabha in Article 332 and the State Assemblies in Article 330. (4) makes both exchanges.

Q4 · Topic question 2

Q2. Answer: (3) 1, 3 and 4 only

- Statement 1 is correct: under clause (5)(b) of Article 338 the NCSC inquires into specific complaints of the deprivation of the rights and safeguards of the SCs, and under clause (8), while doing so, it has all the powers of a civil court trying a suit.
- Statement 2 is not correct: under clause (2) of Article 341 only Parliament, by law, may include a caste in or exclude it from the list. "Save as aforesaid", a notification under clause (1) "shall not be varied by any subsequent notification". The President issues the first list but cannot add to it by a later notification.
- Statement 3 is correct: section 14(1) of the PoA Act, as substituted from 26 January 2016, says that the courts so established or specified "shall have power to directly take cognizance" of offences under the Act.
- Statement 4 is correct: in Prathvi Raj Chauhan (10 February 2020) the Court held that if the complaint does not make out a prima facie case for applying the Act, the bar in sections 18 and 18A "shall not apply".
- Why the other options are wrong: (1) includes statement 2, which is not correct, and leaves out statement 4. (2) includes statement 2 and leaves out statements 1 and 3. (4) leaves out statement 4, which is correct.

Topic 213
Economic growth and economic development: the difference

Day 22 · Indian & AP Economy and Planning | Unit C-1 · English

Answer explanations

Q5 · Topic question 1

Q1. Answer: (3) 2 and 3 only

- Statement 1 is wrong: NCERT says GDP does not take such an externality into account. The refinery's output is counted, but the harm to the fishermen is not, so in this case GDP **overestimates** welfare. Among externalities, it is a beneficial one that makes GDP underestimate welfare.
- Statement 2 is correct: Haryana has the highest per capita income (Rs 3,25,759 in 2023-24), but Kerala has the lowest infant mortality rate (6 per 1,000 live births, against 28 in Haryana).
- Statement 3 is correct: NCERT Class X says that different persons have different developmental goals, that these can be conflicting, and that what is development for one may harm another.
- Why the other options are wrong: (1) contains statement 1, which is wrong, and leaves out statements 2 and 3. (2) leaves out statement 3, which is correct. (4) contains statement 1, which is wrong.

Q6 · Topic question 2

Q2. Answer: (1) A-3, B-4, C-2, D-1

- A-3: the PQLI was developed by Morris D. Morris for the Overseas Development Council in the mid-1970s.
- B-4: the HDI, introduced in UNDP's first Human Development Report in 1990, was created by Mahbub ul Haq in collaboration with Amartya Sen and others.
- C-2: the capability approach is credited to Amartya Sen, with Martha Nussbaum. Since Sen's name is needed here, the HDI goes to Haq, who created it.
- D-1: Gro Harlem Brundtland chaired the World Commission on Environment and Development, whose report "Our Common Future" (1987) gave the best-known definition of sustainable development.
- Why the other options are wrong: (2) exchanges the PQLI and the HDI: it gives the PQLI to Haq and the HDI to Morris. (3) exchanges the capability approach and sustainable development: it gives the capability approach to Brundtland and sustainable development to Sen. (4) makes both exchanges, so all four pairs are wrong.

Topic 214
Food security: National Food Security Act and the PDS

Day 22 · Indian & AP Economy and Planning | Unit C-3 · English

Answer explanations

Q7 · Topic question 1

Q1. Answer: (2) 3 only

- Statement 1 is wrong: 1992 is the year of the Revamped PDS, for remote and backward blocks. The Targeted PDS, with focus on the poor in all areas, was launched in June 1997.
- Statement 2 is wrong: the AAY entitlement in section 3 is 35 kg per household per month, not per person. It is the priority households whose entitlement is counted per person: 5 kg per person per month.
- Statement 3 is correct: section 3(2) extends the entitlement to up to 75 per cent of the rural population and up to 50 per cent of the urban population.
- Statement 4 is wrong: Schedule I fixed the price at not more than Rs 3 per kg for rice, Rs 2 per kg for wheat and Re 1 per kg for coarse grains. Rice was the dearest of the three, not cheaper than wheat.
- Why the other options are wrong: (1) has statements 1 and 2, both wrong, and leaves out statement 3. (3) has statements 2 and 4, both wrong, and leaves out statement 3. (4) has statement 3 but adds statements 1 and 4, which are wrong.

Q8 · Topic question 2

Q2. Answer: (4) A-2, B-1, C-4, D-3

- Why it is correct: section 4 is for pregnant women and lactating mothers: a free meal during pregnancy and for six months after childbirth, and a maternity benefit of not less than Rs 6,000 (A-2). Section 5 is for children: free meals through the anganwadi from six months to six years, and a free mid-day meal at school up to class VIII or the age of fourteen (B-1). Section 15 provides the District Grievance Redressal Officer, an officer for each district, against whose orders an appeal lies to the State Commission (C-4). Section 16 constitutes the State Food Commission of a Chairperson, five other Members and a Member-Secretary, with at least two women (D-3).
- Why (3) is wrong: it exchanges the two grievance provisions. The district officer is section 15, and the Commission to which appeals go is section 16; the ladder runs from section 14 to section 16 in that order.
- Why (2) is wrong: it exchanges the two nutrition provisions. Mothers come first, in section 4; children follow, in section 5.
- Why (1) is wrong: it makes both exchanges, so all four of its pairs are wrong.

Topic 215
Sex ratio and child sex ratio in India

Day 22 · Geography | Unit D-3 · English

Answer explanations

Q9 · Topic question 1

Q1. Answer: (4) 2 and 3 only

- Statement 1 is wrong: the lowest sex ratio among the Union territories in 2011 was in Daman and Diu (618). Delhi had 868, above Dadra and Nagar Haveli (774) and Chandigarh (818).
- Statement 2 is correct: the series runs from 972 in 1901 down to 927 in 1991, its lowest point, and then rises to 933 in 2001 and 940 (provisional) or 943 (final) in 2011.
- Statement 3 is correct: the sex ratio rose from 927 (1991) to 943 (2011, final), while the child sex ratio fell from 945 to 918 (final; 914 provisional). On either set of figures the two moved in opposite directions.
- Statement 4 is wrong: NCERT gives the world figure as 102 males per 100 females, not 102 females per 100 males. The world figure is written the other way round from India's females per 1,000 males.
- Why the other options are wrong: (1) has statements 1 and 4, which are wrong, and leaves out statement 3. (2) leaves out statement 2, which is correct. (3) has statements 1 and 4, which are wrong, and leaves out statement 2.

Q10 · Topic question 2

Q2. Answer: (1) 911

- Working: girls aged 0 to 6 = 1,20,000 - 62,800 = 57,200. Child sex ratio = girls ÷ boys × 1,000 = 57,200 ÷ 62,800 × 1,000 = 910.8, which rounds to 911.
- (2) 961 is wrong: it is the overall sex ratio of the district (4,90,000 ÷ 5,10,000 × 1,000 = 960.8), got by using the total population in place of the 0 to 6 group.
- (3) 1,098 is wrong: it is boys per 1,000 girls (62,800 ÷ 57,200 × 1,000 = 1,097.9), the ratio turned upside down.
- (4) 1,911 is wrong: it comes from dividing all the children, 1,20,000, by the boys (1,20,000 ÷ 62,800 × 1,000 = 1,910.8), that is, putting the total in place of the girls.
- Check: boys outnumber girls, so the answer must be below 1,000. That leaves (1) and (2), and only the 0 to 6 figures give the child sex ratio.

Topic 216
Peninsular plateau: hills, plateaus and passes

Day 22 · Geography | Unit D-2 · English

Answer explanations

Q11 · Topic question 1

Q1. Answer: (1) A-3, B-1, C-4, D-2

- Why it is correct: the Palghat gap lies between the Nilgiri hills to the north and the Anaimalai hills to the south, so the Anaimalai hills lie south of the gap (A-3) and the Nilgiri hills north of it (B-1). The Velikonda range, one of the lower eastern ranges of the Eastern Ghats in Andhra Pradesh, descends to the coastal plains in northern Nellore district (C-4). The Javadi (Jawadhu) hills lie in northern Tamil Nadu (D-2).
- Why (2) is wrong: it exchanges the Anaimalai and the Nilgiri hills. The Nilgiris, where the two Ghats meet, are north of the Palghat gap; the Anaimalai hills, with Anai Mudi, are south of it.
- Why (3) is wrong: it exchanges the Velikonda range and the Javadi hills. The Velikonda is an Andhra Pradesh range that ends in Nellore district; the Javadi hills are in northern Tamil Nadu.
- Why (4) is wrong: it makes both exchanges, so none of its four pairs is right.

Q12 · Topic question 2

Q2. Answer: (3) 2 and 4 only

- Statement 1 is wrong: Class IX says the Chambal, the Sind, the Betwa and the Ken flow from south-west to north-east, which shows that the Central Highlands slope towards the north and north-east.
- Statement 2 is correct: Class XI says the Malda fault in West Bengal separates the North-eastern Plateau, that is, the Meghalaya and Karbi Anglong plateau, from the Chotanagpur plateau.
- Statement 3 is wrong: Class IX says it is the Western Ghats that are continuous and can be crossed through passes only. Class XI calls the Eastern Ghats discontinuous and low hills, highly eroded by the Mahanadi, the Godavari, the Krishna and the Kaveri; Britannica also calls them a discontinuous range.
- Statement 4 is correct: Class IX says the Aravali hills extend from Gujarat to Delhi in a south-west to north-east direction; Britannica says the range runs from near Ahmadabad to Delhi.
- Why the other options are wrong: (1) includes statement 1, which is wrong, and leaves out statement 4. (2) includes statement 3, which is wrong, and leaves out statement 2. (4) includes statements 1 and 3, which are both wrong, and leaves out statements 2 and 4.

Topic 217
Science in daily life: physics at home

Day 22 · Science & Technology | Item 18 · English

Answer explanations

Q13 · Topic question 1

Q1. Answer: (3) 2, 3 and 4 only

- Statement 1 is wrong: the rear-view (wing) mirror of a vehicle is a convex mirror, not a concave one. NCERT prefers it because it always gives an erect, though diminished, image and, being curved outwards, has a wider field of view.
- Statement 2 is correct: NCERT says concave mirrors are commonly used in torches, searchlights and vehicle headlights to get powerful parallel beams of light.
- Statement 3 is correct: myopia is corrected by a concave lens, and the power of a concave lens is negative.
- Statement 4 is correct: NCERT gives the raised look of the bottom of a tank or a pond containing water as an effect of refraction.
- Why the other options are wrong: (1) includes statement 1, which is wrong, and leaves out statements 2 and 4, which are correct. (2) includes statement 1 and leaves out statement 3. (4) leaves out statements 3 and 4, which are correct.

Q14 · Topic question 2

Q2. Answer: (2) A-4, B-2, C-1, D-3

- Why it is correct: the core of an optical fibre has a higher refractive index than its cladding, so light is carried along by repeated total internal reflections even when the fibre is bent (A-4). Stars twinkle because starlight is refracted by the atmosphere on its way to the eye (B-2). Water seeps through the surface of an earthen pot and evaporates, and this cools the water inside (C-1). A thermos bottle (vacuum flask) has double walls with the space between them evacuated, to reduce conduction and convection, and silver-coated walls that reflect radiation back (D-3).
- Why (1) is wrong: it exchanges the optical fibre and the twinkling of stars. Total internal reflection carries light along a fibre; refraction of starlight by the atmosphere makes stars twinkle.
- Why (3) is wrong: it exchanges the earthen pot and the thermos bottle. An earthen pot cools its water by the evaporation of water that seeps through its surface; keeping heat transfer to a minimum, with an evacuated space between the walls and silvered walls, is the thermos bottle's principle.
- Why (4) is wrong: it exchanges both pairs, so all four matches are wrong.

Topic 218
Analogy: word, letter and number

Day 22 · General Mental Ability: Reasoning & Psychological | Item 1 · English

Answer explanations

Q15 · Topic question 1

Q1. Answer: (2) TXA

- Find the rule: D (4) → F (6) is +2. G (7) → J (10) is +3. K (11) → O (15) is +4. The shift grows by 1 from one place to the next: +2, +3, +4.
- Apply: R (18) + 2 = 20, which is T. U (21) + 3 = 24, which is X. W (23) + 4 = 27, and 27 - 26 = 1, which is A (going round past Z).
- Check the gaps inside the terms: in DGK the gaps are 3 and 4, in FJO 4 and 5; in RUW they are 3 and 2, and in TXA 4 and 3. Each gap in the second term is 1 more than the gap in the first term, in both pairs.
- Why (1) is wrong: TWY is RUW with +2 at every place. It fixes the rule from the first letter alone and misses the growing shift.
- Why (3) is wrong: SWZ is RUW with +1, +2, +3. Every shift is one short, the slip of counting the starting letter as the first step.
- Why (4) is wrong: AXT has the letters of the right answer in the reverse order.

Q16 · Topic question 2

Q2. Answer: (4) 9 : 82

- Find the rule: 7 × 7 = 49, and 49 + 1 = 50. The second number is the square of the first plus 1.
- Test (4): 9 × 9 = 81, and 81 + 1 = 82. It fits.
- Why (1) is wrong: 3 : 28 is the cube plus 1 (27 + 1). By that rule 7 would give 343 + 1 = 344.
- Why (2) is wrong: 6 : 36 is the square without the +1. By that rule 7 would give 49, not 50.
- Why (3) is wrong: 8 : 17 adds the number to itself and then adds 1 (8 + 8 + 1), instead of multiplying the number by itself. By that rule 7 would give 15.

Topic 219
Lines and angles: types and pairs of angles

Day 22 · General Mental Ability: Quantitative & Data | Item 13 · English

Answer explanations

Q17 · Topic question 1

Q1. Answer: (1) 12°

- Worked solution: let the angle be x. Its complement is 90 - x. So 90 - x = 5x + 18, which gives 6x = 72 and x = 12°.
- Check: the complement is 90 - 12 = 78°, and 5 × 12 + 18 = 78°.
- Why (2) is wrong: 18° comes from moving the 18 to the other side without changing its sign: 90 + 18 = 6x gives x = 18. The right step is 90 - 18 = 6x.
- Why (3) is wrong: 27° comes from writing the complement as 180 - x, which is the supplement: 180 - x = 5x + 18 gives 6x = 162 and x = 27. The complement is 90 - x.
- Why (4) is wrong: 78° is the complement, not the angle. It is what a solver gets by solving for the other angle of the pair (or by setting up the equation with the roles of the angle and its complement exchanged). The question asks for the angle.

Q18 · Topic question 2

Q2. Answer: (3) 85°

- Worked solution, step 1: both angles lie between l and m, and both lie on the right of t. So they are interior angles on the same side of the transversal (co-interior angles). As l and m are parallel, they add up to 180°.
- Step 2: (2x + 25) + (3x + 5) = 180, so 5x + 30 = 180, 5x = 150 and x = 30.
- Step 3: the angle at P = 2 × 30 + 25 = 85°. Check: the angle at Q = 3 × 30 + 5 = 95°, and 85 + 95 = 180.
- Why (1) is wrong: 30 is the value of x, not the angle. Put x back into (2x + 25).
- Why (2) is wrong: 65° comes from treating the two co-interior angles as equal: 2x + 25 = 3x + 5 gives x = 20, and both expressions become 65°. Co-interior angles are supplementary, not equal; equality is the rule for corresponding and alternate angles.
- Why (4) is wrong: 95° is the angle at Q, (3x + 5)°. The question asks for the angle at P.

Topic 220
Current affairs: the green ammonia project at Kakinada

Day 22 · Current Affairs | CA-AP · English

Answer explanations

Q19 · Topic question 1

Q1. Answer: (4) 1 and 3 only

- Statement 1 is correct: the Green Hydrogen Standard of 19 August 2023 covers both electrolysis-based and biomass-based hydrogen, as long as emissions stay within the limit.
- Statement 2 is wrong: grey hydrogen is made from natural gas by methane reformation with no carbon capture. Hydrogen from fossil fuel with carbon capture, utilisation and storage is blue hydrogen.
- Statement 3 is correct: of the Rs 19,744 crore, SIGHT has Rs 17,490 crore; pilot projects, research and other components share the rest.
- Statement 4 is wrong: the ICE Policy's target is 1.50 MTPA of green hydrogen. The figure of 5 MMT a year by 2030 is the national Mission's target.
- Why the other options are wrong: (1) contains statements 2 and 4, which are wrong. (2) leaves out statement 1, which is correct. (3) contains statements 2 and 4.

Q20 · Topic question 2

Q2. Answer: (2) A-1, B-3, C-4, D-2

- Why it is correct: green hydrogen is made by electrolysis of water with electricity from renewable energy (A-1). Green ammonia is made by the Haber-Bosch process, in which hydrogen from renewable sources reacts with nitrogen (B-3). Pink hydrogen is made by electrolysis of water with electricity from nuclear energy (C-4). Turquoise hydrogen is made by pyrolysis of methane (D-2).
- Why (1) is wrong: it exchanges green hydrogen and green ammonia. Electrolysis of water gives hydrogen; the Haber-Bosch process turns hydrogen and nitrogen into ammonia.
- Why (3) is wrong: it makes both exchanges. Besides mixing up green hydrogen and green ammonia, it makes pink hydrogen come from methane and turquoise hydrogen from electrolysis with nuclear energy.
- Why (4) is wrong: it exchanges pink and turquoise hydrogen. Pink hydrogen uses nuclear energy for electrolysis of water; turquoise hydrogen comes from pyrolysis of methane.