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PREFACE

The will to win, the desire to succeed, the urge to reach your full potential, these are the keys that will unlock the door to personal excellence - Confucius

Introduction

More than 10 lakh candidates appear for competitive examinations like the Civil Services Examination (CSE), State Public Service Commission Examinations (PSCs), and other government examinations. These examinations call for rigorous and robust preparation, meticulous practice, and discipline. Often candidates ignore comprehensive resources like NCERT books in favour of more well known and popular resources, thus missing out an important element that can provide them the extra edge in preparation.

The *One for All NCERT Question Bank* is an objective question bank for competitive examinations at the national and state level, covering Economics, History, Geography, Polity and General Science. It is one of the most important books any candidate can add to his/her examination preparation portfolio.

How will this book benefit students?

The *One for All NCERT Question Bank* has been developed with competitive examinations in mind, like UPSC, State PSCs and other competitive examinations. It has complete coverage of the NCERT syllabus, with chapter wise summary to cover all important points. Questions are structured exactly as per the exam pattern, and also feature 100% detailed solutions, aiding students to understand their preparation gaps. It features chapter wise MCQs in level, with the moderate level featuring questions from state PSCs and other government examinations, and the advance level featuring questions from the UPSC examinations. Previous years question papers of all relevant exams (UPSC, State PSC, amongst others) have been included to equip students with previous question paper pattern. This book also includes comprehensive video course of 10+ hours which makes it one of its own kind of a book.

This book has been developed with the highest editorial standards, keeping in mind the rigor and the meticulousness of resources catering to competitive examinations. The features of the book make it a must-have for anyone preparing for any competitive examination.

We also wish to thank **Mr. Ankit Raj** and **Md. Shoeb** who made this book a valuable addition to the Oswaal Knowledge family. Their expert knowledge, advice and recommendations will help our readers gain valuable insights and knowledge and secure a high rank in these competitive examinations.

We wish the readers great success ahead!

All the best!
Team Oswaal

Importance of NCERT Books for UPSC and other government exams

Introduction

Books published by the National Council of Educational Research and Training (NCERT) are usually not considered to be top of mind when it comes to preparing for competitive examinations like Civil Services Examinations (CSE), Combined Defence Services (CDS), exams conducted by National Defence Academy (NDA) and Central Armed Police Forces (CAPF). However, this is a fallacy that can cost any student dearly, not just in terms of ranks secured in the examination, but even qualifications. NCERT books are by far the most comprehensive and reliable source of information that can elevate the level of preparation a candidate has for any of the above competitive examinations.

Here are five reasons why NCERT books should be among the go-to resources for preparing for competitive examinations.

1. Credibility

NCERT books are an authentic source of information as the books are authored by reputed, credible experts, and the information published is sourced from credentialed government reports, ministries agencies, and institutions. If a candidate prepares using any NCERT textbook, then s/he can be rest assured that the content is factually correct, updated, and accurate. In competitive examinations, where a single mark difference can be crucial, factual accuracy is a huge differentiator and determinant of qualification and rank.

2. Comprehensive

NCERT books are comprehensive and reliable. The language in NCERT books is lucid and easily understandable. The books provide a basic idea of all the concepts, provide detailed explanations where necessary, and aid in the understanding of complex topics. Most examinations rely on NCERT topics for question selection and topic coverage and missing out on NCERT books can cost candidates dearly.

3. Research-driven

NCERT books are authored by subject matter experts and specialists who have decades of experience in their chosen fields. The content in NCERT books is authored after extensive research done by authors, co-authors, editors, and support staff. Usually, the authors are eminent experts, professors of reputed academic universities, and research institutions.

5. Authentic

NCERT books are almost error-free. The content is checked times before it is published. There is an extensive editorial team that supports the publication of all books and hence the content and editorial quality are of the highest standard.

Conclusion

Candidates preparing for competitive examinations cannot afford to give NCERT books a miss. Authored by experts and backed by research, these books aid in bridging the learning curve as they are quite lucid and easy to understand. Having a good grasp and understanding of the basics can improve the confidence level of the candidates during preparation and spur them to secure better marks and rank.

Aashirvad Kumar

UPSC Consultant-Oswaal Books

Faculty SPM IAS Academy, Guwahati, 6 years of Teaching experience,

3 UPSC Interviews

Mentored Multiple Single digit Ranks in UPSC

Approach to read NCERT Books for UPSC and other government exams

Introduction

The Civil Services Examination (CSE) conducted by the Union Public Service Commission (UPSC) for appointments into the elite branches of civil services of the Government of India is considered one of the most rigorous and demanding examinations in India.

The intake applications rate for UPSC is quite high – every year around 900,000 to 1,000,000 candidates apply every year. Candidates feel daunted, and sometimes are unsure of getting the right rank even if they have the right preparation, because of the sheer number of candidates appearing in the examination. Often in an attempt to read more current resources, candidates miss out on reading the most comprehensive resources already at their disposal, books published by the National Council of Educational Research and Training (NCERT).

Here are a few strategies for how NCERT books can be leveraged for CSE preparation.

1. Coverage strategy

It is advised to cover the NCERT books subject-wise from Class VI to XII. For example, for history, you may want to start with the textbook for Class VI, moving on to VII, VIII, and so on. This will give you subject continuity and help you build your understanding chronologically. It is also recommended to build interlinks between your knowledge of the subject from a previous class while reading the textbook of the next class. To further consolidate your preparation, solve MCQs from another book to help cement your understanding of the subject further.

2. Visual assets

For subjects like geography and biology, visual assets are very important. Diagrams provided in NCERT textbooks are very important for these subjects. Some of the representations are relevant for the main of various state public service examinations.

3. Subject-specific strategies

It is imperative to give special attention to some subjects such as geography, and science (environment science sections). Questions from these topics are frequently asked in the examination and preparing from NCERT ensures that your subject knowledge is current, authentic, and up to date.

Conclusion

Candidates preparing for UPSC need to leverage every resource for strategic competitive advantage. Preparation with NCERT books can give candidates the necessary edge. To help candidates improve their confidence while attempting UPSC, Oswaal Books is launching NCERT summaries from Class VI-XII. This power-packed resource will help save time by highlighting the necessary sections for UPSC preparation as well as give candidates confidence that they have covered everything. This best-in-class resource will give candidates a tremendous advantage as they are a derivative of the research-backed NCERT books but are condensed for UPSC preparation.

Aashirvad Kumar

UPSC Consultant-Oswaal Books

Faculty SPM IAS Academy, Guwahati, 6 years of Teaching experience,

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THE EARTH IN THE SOLAR SYSTEM

Celestial bodies

- The Sun, the Moon and all those objects shining in the night sky are called celestial bodies.
- Some celestial bodies are huge and hot. They are made up of gases.
- Stars have their own heat and light, which they emit in large amount.

Constellations

- The various patterns formed by different groups of stars are called constellations e.g., Ursa Major or Big Bear and Small Bear.
- One of the most recognizable constellations is the Saptarishi (a group of seven stars).

- Saptarishi forms a part of Ursa Major Constellation.

Pole Star

- The North Star indicates the north direction.
- It is also called the Pole Star.
- It always remains in the same position in the sky.
- We can locate the position of the Pole Star with the help of the Saptarishi.

The Solar System

- Solar means related to the sun.
- Solar System consists of the Sun, eight planets, satellites, and other celestial bodies like asteroids and meteoroids.

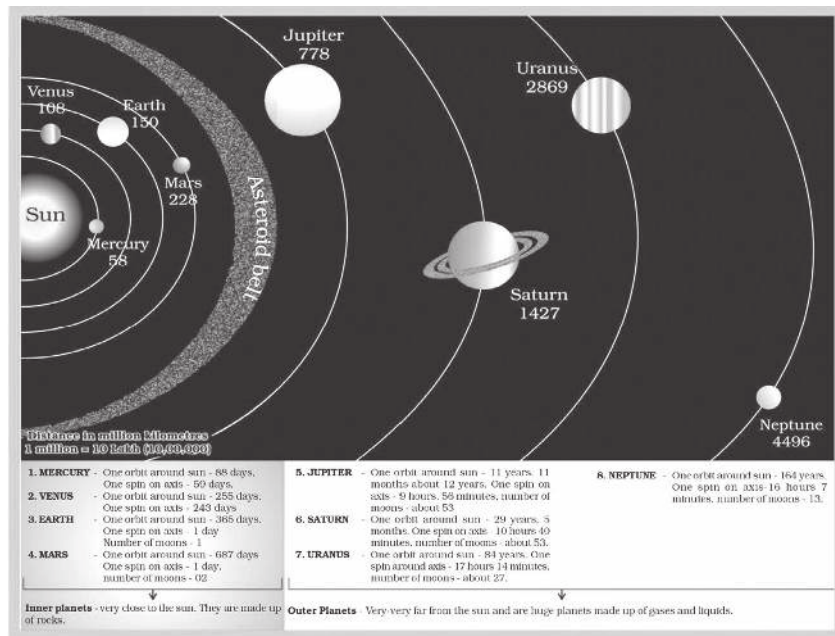


Figure: The Solar System

The Sun

- The Sun is in the centre of the solar system.
- The Sun is the ultimate source of heat and light for the solar system.
- It is made up of extremely hot gases.
- It is the nearest star to the earth.

Planets

- Planets do not have their own heat and light. They are lit by the light of the stars.
- There are eight planets in our solar system and they move around the Sun in a fixed path called orbits.
- In order of their distance from the sun, they are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

- Mercury completes one round around its orbit in 88 days.
- Venus is called Earth's twin sister as the shape and size of Venus are very much similar to earth.
- Jupiter, Saturn and Uranus have rings around them. These are belts of small debris and gaseous particles.
- Pluto is considered as a dwarf planet because its orbit is not fixed.

Earth

- Its shape is described as a Geoid because it is slightly flattened at the poles.
- Earth supports life because of the following factors:
 1. Neither too hot nor too cold
 2. Availability of Water and air (oxygen)

- Earth is called a blue planet
- Earth appears blue from space because its two-thirds of surface is covered by water.

The Moon

- Our Earth has only one moon.
- Its diameter is only one-third of the earth.
- The distance between earth and moon is 3,84,400 km.
- The moon revolves around the earth in about 27 days.
- We can see only one side of the moon as the time taken by the Moon to rotate on its own axis is same time taken to revolve around the Earth.

Asteroids

- Numerous tiny bodies which move around the Sun are called asteroids.
- They are found between the orbits of Mars and Jupiter.

Meteoroids

- Small pieces of rocks which move around the Sun are called meteoroids.
- Sometimes these meteoroids come near the Earth and tend to drop upon it.
- During this process due to friction with the air they get heated up and burn.
- It causes a flash of light.

Milky way Galaxy

- Milky Way galaxy (Akash Ganga) is a cluster of millions of stars.
- It appears whitish broadband in the clear and starry night.
- A galaxy is a huge system of billions of stars, and clouds of dust and gases.
- Our solar system is part of this galaxy.

QUESTIONS

LEVEL-1 : MODERATE

1. How many stars are there in Small Bear constellations?
(a) 6 (b) 7
(c) 8 (d) 9
2. Which of the following planets, does not have rings?
(a) Venus (b) Jupiter
(c) Saturn (d) Uranus
3. Which of the following planet has the highest number of moons?
(a) Mars (b) Saturn
(c) Uranus (d) Neptune
4. Which of the following planet is considered as the Earth's twin?
(a) Mercury (b) Mars
(c) Saturn (d) Venus
5. **Assertion (A):** Only one side of the moon is visible to us on the Earth.
Reason (R): The rotation time of the Earth and moon are exactly the same.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) Both A and R are false.

LEVEL-2 : ADVANCED

1. Which of the following celestial bodies are included in Solar System?
1. Dwarf Planets 2. Moon
3. Asteroids 4. Meteoroids
Select the correct answer using the code given below:
(a) 1 and 2 only (b) 1, 2 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4
2. With reference to the celestial bodies, consider the following statements:
1. Saptarishi is considered a part of the Ursa Major.
2. People used Saptarishi to determine the directions during the night.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

3. Consider the following statements:

1. Asteroid belt found between Jupiter and Saturn.
2. Meteoroids are made of dust clouds and gases which move around the Sun.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

LEVEL-3 : PREVIOUS YEARS

1. The term Goldilocks Zone is often seen in the news in the context of [UPSC]
(a) the limits of the habitable zone above the surface of the Earth
(b) regions inside the Earth where shale gas is available
(c) search for the Earth-like planets in outer space
(d) search for meteorites containing precious metals
2. A person stood alone in a desert on a dark night and wanted to reach to his village which was situated 5 km east of the point where he was standing. He has no instruments to find the direction but he located the polestar. The most convenient way now to reach his village is to walk in the [UPSC]
(a) direction facing the polestar
(b) direction opposite to polestar
(c) direction keeping the polestar on his left
(d) direction keeping the polestar on his right
3. The coldest planet in the solar system is: [MPPSC]
(a) Neptune (b) Jupiter
(c) Mars (d) Saturn
4. Which of the following is known as 'Morning Star'? [UP Lower Sub.]
(a) Mercury (b) Venus
(c) Mars (d) Saturn
5. Size of the Sun is how many times bigger than that of the Earth? [MPPSC]
(a) 124 times (b) 100 times
(c) 109 times (d) 115 times
6. Which of the following planets, does not have a satellite? [UP Lower Sub.]
(a) Earth (b) Mars
(c) Jupiter (d) Venus

ANSWERS WITH EXPLANATION

LEVEL-1 : MODERATE

1. Option (b) is correct.

Explanation:

- One of the most easily recognizable constellations is the Saptarishi.
- Saptarishi is also called small bear constellations.
- It is a group of seven stars that forms a part of Ursa Major Constellation.

2. Option (a) is correct

Explanation:

- Jupiter, Saturn and Uranus have rings around them.
- These rings are belts of small debris.
- These rings may be seen from the earth with the help of powerful telescopes.

3. Option (b) is correct

Explanation: Number of Moons

- | | |
|---|----------------|
| ● Mercury - 0 | ● Venus - 0 |
| ● Earth - 1 | ● Mars - 2 |
| ● Jupiter - 79 (53 confirmed, 26 provisional) | |
| ● Saturn - 82 (53 confirmed, 29 provisional) | |
| ● Uranus - 27 | ● Neptune - 14 |

4. Option (d) is correct

Explanation:

- Mercury is the nearest planet to the Sun. It takes only about 88 days to complete one round along its orbit.
- Venus is considered as 'Earth's-twin' because its size and shape are very much similar to that of the Earth.

5. Option (c) is correct

Explanation: Rotation of the Moon and Earth is not same. Moon takes 27 days and Earth takes 24 Hours. We are able to see only one side of the moon because the time taken by the Moon to rotate on its axis is same time taken to revolve around the Earth.

LEVEL-2 : ADVANCED

1. Option (d) is correct.

Explanation:

- The Sun, eight planets, dwarf planets, satellites and some other celestial bodies known as asteroids and meteoroids form the solar system.
- We often call it a solar family, with the sun as its Head.

2. Option (a) is correct

Explanation:

- While watching the night sky, you may notice various patterns formed by different groups of stars.
- These are called constellations. Ursa Major or Big Bear is one such constellation.
- One of the most easily recognizable constellations is the Saptarishi.
- Saptarishi is a group of seven stars that forms a part of Ursa Major Constellation. Hence, statement 1 is correct.

- The North Star indicates the north direction. It is also called the Pole Star. Hence, statement 2 is not correct.
- Pole Star always remains in the same position in the sky.
- We can locate the position of the Pole Star with the help of the Saptarishi.

3. Option (d) is correct

Explanation: Asteroids:

- There are numerous tiny bodies that also move around the sun. These bodies are called asteroids.
- They are found between the orbits of Mars and Jupiter. Hence, Statement 1 is not correct.

Meteoroids:

- The small pieces of rocks which move around the sun are called meteoroids. Hence, statement 2 is not correct.
- Sometimes these meteoroids come near the earth and tend to drop upon it.
- During this process due to friction with the air they get heated up and burn. It causes a flash of light.

LEVEL-3 : PREVIOUS YEARS

1. Option (c) is correct.

Explanation:

- The 'Goldilocks Zone,' or habitable zone, is the range of distance with the right temperatures for water to remain liquid.
- Discoveries in the Goldilocks Zone, like Earth-size planet Kepler-186f, are what scientists hope will lead us to water and one day life.

2. Option (c) is correct

Explanation:

- The North Star indicates the north direction. It is also called the Pole Star. It always remains in the same position in the sky.
- The village of person is situated 5 km east of the point where the person is standing. He has to go in the direction of keeping the polestar on his left.

3. Option (a) is correct

Explanation: Neptune is the coldest planet of our solar system because it is the farthest planet from the Sun.

4. Option (b) is correct

Explanation:

- Venus is known as the Morning star as it brightest planet of all and can see in the morning in the sky.
- It is also known as the twin sister of Earth because its size and mass are almost the same as earth.

5. Option (c) is correct

Explanation: Our Sun is a bright, hot ball of hydrogen and helium at the centre of our solar system. It is 864,000 miles (1,392,000 km) in diameter, which makes it 109 times wider than Earth.

6. Option (d) is correct

Explanation: Venus does not have a satellite. In our solar system, there are only two planets that do not have a natural satellite (moon). These are Mercury and Venus.

2

GLOBE: LATITUDE AND LONGITUDE

Globe

- Globe is the true model (Miniature form) of the Earth.
- On the globe, Countries, Continents, and Oceans are shown in their correct size.
- A needle is fixed through the globe in a tilted manner which is called its axis.
- Two points on the globe through which the needle passes called poles are– the North Pole and the South Pole.
- The globe can be moved around the needle from west to east just as the Earth moves.

Latitude

- The Equator is an imaginary line running through globe which divides it into two equal parts.
- The Equator is a very important reference point to locate places on earth.
- Northern half of the Earth is known as the northern hemisphere and the Southern half is known as Southern Hemisphere.
- Parallels of latitude: All parallel circles from the equator to the poles are called parallels of latitudes which are measured in degree.
- The Equator is zero degree latitude and 90 degree north latitude marks the Northern Pole and 90 degree latitude marks the South Pole.
- Northern latitudes: All latitudes north of the equator, are indicated by 'N'.
- Southern Latitudes: All latitudes south of the equator are indicated by 'S'.

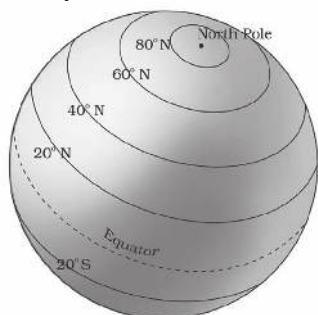


Figure: Latitude

Some important Latitudes

- Tropic of Cancer: $23\frac{1}{2}^{\circ}$ in the northern hemisphere.
- Tropics of Capricorn: $23\frac{1}{2}^{\circ}$ in the southern hemisphere.
- Arctic Circle: at $66\frac{1}{2}^{\circ}$ north of the equator.
- Antarctic Circle: at $66\frac{1}{2}^{\circ}$ south of the equator.

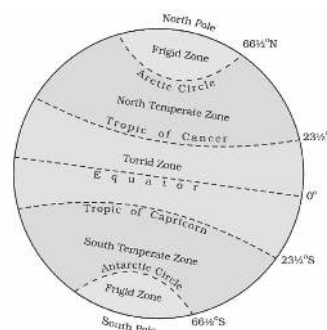


Figure: Important Latitudes and Heat Zones

Heat Zones on the Earth

- Torrid Zone: The latitudes between Tropic of Cancer and Tropic of Capricorn where the mid sun is exactly overhead at least once a year called Torrid Zone. Sun is never overhead beyond these areas.
- Temperate Zones: The areas bounded by Tropic of Cancer and Arctic Circle in northern hemisphere and the Tropic of Capricorn and Antarctic Circle in the southern hemisphere where the temperature is moderate; is called Temperate Zones.
- Frigid Zone: The areas lying between Arctic Circle and the North Pole in the northern hemisphere and Antarctic Circle and the South Pole in the southern hemisphere are called frigid zone. It is a very cold area.

Longitudes

- In order to locate the correct position of places, we must know how far east or west these places are located from the given line of reference line running from the North Pole to the South Pole. These lines of reference are called the meridians of longitude.
- Each degree is divided into minutes and minutes divided into seconds.
- The distance between two longitudes steadily decreases from equator to pole where all the meridians meet.
- All the meridians have equal length and are counted from Prime meridian which passes through Greenwich where the Royal British Observatory is located.
- The prime meridian's value is zero. From the Prime Meridian we measure 180 degrees eastward (E) and 180 degrees westward (W).

Longitude and Time

- Those places east of Greenwich will be ahead of Greenwich time and those to the west will be behind the Greenwich time.

- The Earth rotates 360 degree in 24 hours which means 15 degree in an hour or 1 degree in four minutes.
- Standard Time: It is necessary to adopt the local time of some central meridian of a country.
- In India, it is $82^{\circ} \frac{1}{2}^{\circ}$ E is treated as the standard meridian. The local time at this meridian is called Indian standard time (IST). France, including its overseas territories, has the most time zones (12).

QUESTIONS

LEVEL-1 : MODERATE

- The line of latitude of the Antarctic Circle is:
 - $23\frac{1}{2}^{\circ}$ N
 - $23\frac{1}{2}^{\circ}$ S
 - $66\frac{1}{2}^{\circ}$ N
 - $66\frac{1}{2}^{\circ}$ S
- The Temperate Zone lies between:
 - 0° - 90° N
 - 60° N - 60° S
 - $23\frac{1}{2}^{\circ}$ N - $23\frac{1}{2}^{\circ}$ N
 - $23\frac{1}{2}^{\circ}$ N - $66\frac{1}{2}^{\circ}$ N
- The Frigid Zone is a situation between:
 - Tropic of Cancer and Tropic of Capricorn
 - Tropic of Cancer and Arctic Circle and Tropic of Capricorn and Antarctic Circle
 - Arctic Circle and the North Pole and Antarctic Circle and the South Pole
 - Arctic Circle and Antarctica Circle
- What is India's Standard Meridian?
 - $72\frac{1}{2}^{\circ}$ E
 - $82\frac{1}{2}^{\circ}$ E
 - $92\frac{1}{2}^{\circ}$ E
 - $78\frac{1}{2}^{\circ}$ E
- Which of the following countries has the highest number of Standard-Times?
 - U.S.A.
 - Canada
 - Russia
 - Chile

LEVEL-2 : ADVANCED

- Consider the following statements:
 - The distance between two longitudes is equal everywhere.
 - All circles from Prime Meridian up to the international day line are called parallels of longitudes.
 Which of the statements given above is/are correct?
 - 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
- Consider the following statements:
 - Temperate zones lie between Arctic Circle and North Pole and Antarctic Circle and the South Pole.
 - Torrid zones lie between Tropic of Cancer and Tropic of Capricorn only.

- Frigid zones lie between Tropic of Cancer and North Pole; and Tropic of Capricorn and South Pole.

Which of the statements given above is/are correct?

- 1 and 2 only
 - 2 only
 - 3 only
 - 1, 2 and 3
- With respect to International Date Line, consider the following statements:
 - It is exactly opposite to the Prime Meridian where east and west lie.
 - It is a straight line which bifurcates the Pacific Ocean into two equal halves.
 Which of the statements given above is/are correct?
 - 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
 - Consider the following statements:
 - India's Standard Meridian is located east of Greenwich at $92^{\circ} 30' \text{E}$.
 - Indian Standard Time is 5 hours and 30 minutes ahead of Greenwich Meridian Time.
 Which of the statements given above is/are correct?
 - 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2

LEVEL-3 : PREVIOUS YEARS

- The equator does not pass through which of the following countries? [UPPSC]
 - Gabon
 - Somalia
 - Equatorial Guinea
 - Rwanda
 Select the correct answer using the codes given below.
Codes:
 - 1 and 4
 - 2 and 4
 - 2 and 3
 - 3 and 4
- The Latitude at which 'Annual Range of Temperature remains minimum is: [RAS/RTS]
 - Equator
 - Tropic of Cancer
 - Tropic of Capricorn
 - North Pole Circle
- Which of the following city is nearest to the Tropic of Cancer? [UPPSC]
 - Jabalpur
 - Ahmedabad
 - Ujjain
 - Varanasi

ANSWERS WITH EXPLANATION

LEVEL-1 : MODERATE

- Option (d) is correct.**
Explanation: There are four important parallels of latitudes:
 - Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) in the Northern Hemisphere.
 - Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) in the Southern Hemisphere.

- Arctic Circle at $66\frac{1}{2}^{\circ}$ north of the equator.
 - Antarctic Circle at $66\frac{1}{2}^{\circ}$ south of the equator
- Option (d) is correct**
Explanation: The areas bounded by the Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) and the Arctic Circle ($66\frac{1}{2}^{\circ}$ N) in the Northern Hemisphere, and the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) and the Antarctic Circle ($66\frac{1}{2}^{\circ}$ S) in the Southern Hemisphere, have moderate temperatures. These are, therefore, called Temperate Zones.

3. Option (c) is correct

Explanation:

- Areas lying between the Arctic Circle and the North Pole in the Northern Hemisphere; and the Antarctic Circle and the South Pole in the Southern Hemisphere, are very cold.
- It is because here the Sun does not rise much above the horizon.
- Therefore, its rays are always slanting and provide less heat. These are, therefore, called Frigid Zones (very cold).

4. Option (b) is correct

Explanation: In India, the longitude of $82\frac{1}{2}^{\circ}$ E ($82^{\circ} 30'E$) is treated as the standard meridian. The local time at this meridian is taken as the standard time for the whole country. It is known as the Indian Standard Time (IST).

5. Option (c) is correct

Explanation: In Russia, there are as many as eleven standard times. The Earth has been divided into twenty-four time zones of one hour each. Each zone thus covers 15° of longitude.

LEVEL-2 : ADVANCED

1. Option (d) is correct.

Explanation:

- All meridians are of equal length. Longitudes are semicircles and the distances between them decreases pole wards and at the poles the distances between them becomes zero. Hence, statement 1 is not correct.
- All parallel circles from the equator up to the poles are called parallels of latitudes. Latitudes are measured in degrees Hence, statement 2 is not correct.

2. Option (b) is correct

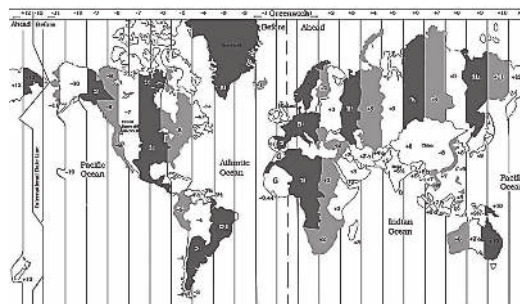
Explanation:

- The areas between the Tropic of Cancer and the Tropic of Capricorn receive the maximum heat and are called the Torrid Zone. Hence, statement 2 is correct.
- The areas bounded by the Tropic of Cancer and the Arctic Circle in the Northern Hemisphere, and the Tropic of Capricorn and the Antarctic Circle in the Southern Hemisphere, have moderate temperatures. These are, therefore, called Temperate Zones. Hence, statement 1 is not correct.
- Areas lying between the Arctic Circle and the North Pole in the Northern Hemisphere and the Antarctic Circle and the South Pole in the Southern Hemisphere, are very cold. Sun's rays are always slanting and provide less heat. These are, therefore, called Frigid Zones (very cold). Hence, statement 3 is not correct.

3. Option (a) is correct

Explanation:

- While the world is divided into 24 time zones, there has to be a place where there is a difference in days, somewhere the day truly "starts" on the planet.



This map is not to scale and is for reference only.

Figure: International Dateline

- The 180° line of longitude is approximately where the International Date Line passes. Hence, statement 1 is correct.
- The time at this longitude is exactly 12 hours from the 0° longitude, irrespective of one travels westward or eastward from the Prime Meridian.
- It is not a straight line; it is basically a zig zag line to avoid the confusion between days among islands. Hence, statement 2 is not correct.

4. Option (b) is correct

Explanation:

- In India, the longitude of $82\frac{1}{2}^{\circ}$ E ($82^{\circ} 30'E$) is treated as the standard meridian. The local time at this meridian is taken as the standard time for the whole country. It is known as the Indian Standard Time (IST). Hence, statement 1 is not correct.
- India located east of Greenwich at $82^{\circ} 30'E$ is 5 hours and 30 minutes ahead of GMT. Hence, statement 2 is correct.

LEVEL-3 : PREVIOUS YEARS

1. Option (d) is correct.

Explanation:

- The Equator passes through 13 countries: Ecuador, Colombia, Brazil, Sao Tome & Principe, Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya, Somalia, Maldives, Indonesia and Kiribati.
- At least half of these countries rank among the poorest in the world.

2. Option (a) is correct

Explanation: The Annual range of temperature is minimum in the Equatorial region. There is little fluctuation throughout the year due to its position with respect to Sun, hence there is no winter in this region.

3. Option (b) is correct

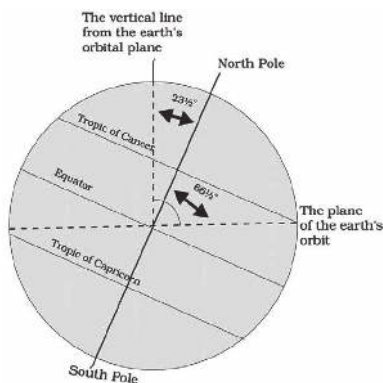
Explanation:

City	Latitude
Jabalpur	23.1815° N
Ahmedabad	23.0225° N
Ujjain	23.1765° N
Varanasi	25.3176° N

MOTIONS OF THE EARTH

Introduction

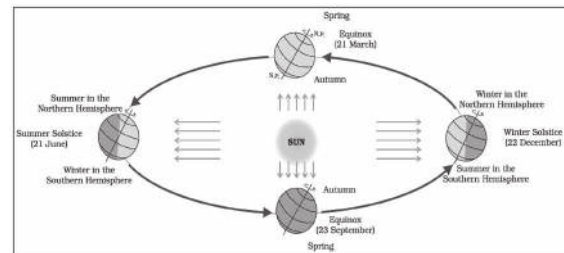
- Earth has two type of motions:
 1. **Rotation:** It is movement of Earth on its axis.
 2. **Revolution:** Movement of Earth around the Sun in its orbit is called revolution.
- **Orbital Plane:** The plane formed by its orbit is called Orbital Plane.
- **Circle of Illumination:** The circle which divides day and night on the globe is called the circle of illumination.

**Figure: Inclination of the Earth**

- If Earth stops rotating then the side facing the sun will become too warm and other side will remain in darkness and will be freezing cold all the time
- Earth takes $365 \frac{1}{4}$ days to complete one revolution around the sun.
- Six hours saved every year becomes a day in four years, which is added in February. This year of 29 days of February is called leap year.

Revolution

- Earth is revolving around the sun in an elliptical orbit. Throughout its orbit, the earth is inclined in the same direction.
- A year is usually divided into summer, winter, spring, and autumn seasons due to the change in the position of the earth around the sun.

**Figure: Revolution of the Earth****Summer Solstice**

- On 21st June, northern hemisphere is tilted towards the sun. As the sun rays directly falls on Tropic of Cancer therefore that area receives more heat.
- Due to slanting of rays in June in northern hemisphere, areas near poles receive less heat than areas around Tropic of Cancer. Six months long days and nights on poles happen due to tilt of the Earth on its axis.
- The largest day and smallest night at Tropic of Cancer occur on 21st June and reverse happens in the southern hemisphere.

Winter Solstice

- On 22nd December, the Tropic of Capricorn receives direct sun rays as the earth's southern hemisphere is tilted towards sun.
- Southern hemisphere receives more heat thus the longest day and shortest night occur on the Tropic of Capricorn and reverse happens in the northern hemisphere.

Equinoxes

- On 21st March and 23rd September, sun rays directly fall on the equator.
- As both hemisphere receives an equal amount of sunlight therefore there are equal day and equal night on the whole earth. Thus it is called equinox.
- On 23rd September, the autumn season is in the Northern hemisphere and spring season is in the southern hemisphere. The reverse happens on 21st March.

QUESTIONS

LEVEL-1 : MODERATE

- The angle formed between Earth's axis and orbital plane is
 (a) $23\frac{1}{2}^\circ$ (b) $66\frac{1}{2}^\circ$
 (c) $82\frac{1}{2}^\circ$ (d) $90\frac{1}{2}^\circ$
- The Circle of Illumination:
 (a) Divides day and night
 (b) Divides Northern hemisphere and South Hemisphere
 (c) Divides Eastern hemisphere and Western hemisphere
 (d) Connecting North and South Pole
- The earth is revolving around the sun in
 (a) an elliptical orbit (b) a circular path
 (c) an uncertain path (d) a tangent path
- Winter solstice is considered on
 (a) 21st June (b) 22nd December
 (c) 23rd March (d) 21st September

LEVEL-2 : ADVANCED

- On 22nd December, the Sun
 (a) is vertically overhead at the Tropic of Cancer
 (b) is vertically overhead at the Tropic of Equator
 (c) does not set below the horizon at the Arctic Circle
 (d) does not set below the horizon at the Antarctic Circle
- Which of the following may happen, if Earth does not rotate?
 1. Earth transforms into a gas planet.
 2. No vegetation can grow on the earth
 3. Land becomes desert which faces the sun
 Select the correct answer using the codes given below:
 (a) 1 and 2 only (b) 2 only
 (c) 3 only (d) 2 and 3 only
- On 21st June, the Northern Hemisphere is tilted towards the sun. The rays of the sun fall directly on the Tropic of Cancer. The North Pole is inclined

towards the sun and the places beyond the Arctic Circle experience continuous daylight for about six months. The longest day and the shortest night at these places occur on 21st June.

These phenomenon are associated with which of the following:

- Summer Solstice
 - Winter Solstice
 - Autumn Equinox
 - Spring Equinox
- Consider the following statements:
 1. 21st March and September 23rd are called equinoxes as earth observes equal day and night.
 2. On 23rd September, there is spring season in the Northern Hemisphere and autumn season in the Southern Hemisphere.

Which of the following statements given below is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

LEVEL-3 : PREVIOUS YEARS

- The Earth's axis of rotation (Polar axis) is always inclined at an angle of [UPPSC]
 (a) 23.0° from the elliptic axis
 (b) 23.1° from the elliptic axis
 (c) 24.5° from the elliptic axis
 (d) 23.5° from the elliptic axis
- What causes the change in season? [Jharkhand PSC]
 (a) Earth's rotation and revolution
 (b) Earth's Revolution
 (c) Earth's Revolution and inclination of its axis
 (d) Earth's rotation and inclination of its axis
- On 21st June, the Sun [UPSC]
 (a) does not set below the horizon at the Arctic Circle
 (b) does not set below the horizon at the Antarctic Circle
 (c) shines vertically overhead at noon on the equator
 (d) shines vertically overhead at noon at the Tropic of Capricorn

ANSWERS WITH EXPLANATION

LEVEL-1 : MODERATE

- Option (b) is correct.**
Explanation: The axis of the earth which is an imaginary line makes an angle of $66\frac{1}{2}^\circ$ with its orbital plane.
- Option (a) is correct**
Explanation:
 - The portion facing the sun experiences day while the other half away from the sun experiences night.
 - The circle that divides the day from night on

the globe is called the circle of illumination. This circle does not coincide with the axis.

- Option (a) is correct**
Explanation:
 From the figure "Revolution of the Earth", it is clear that the earth is going around the sun in an elliptical orbit.
- Option (b) is correct**
Explanation:
 - On 22nd December, the Tropic of Capricorn receives direct rays of the sun as the South Pole tilts towards it.

Motions of the Earth

- As the sun's rays fall vertically at the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S), a larger portion of the Southern Hemisphere gets light.
- Therefore, it is summer in the Southern Hemisphere with longer days and shorter nights. The reverse happens in the Northern Hemisphere.
- This position of the earth is called the Winter Solstice.

LEVEL-2 : ADVANCED

1. Option (d) is correct.

Explanation:

- On 22nd December, the Tropic of Capricorn receives direct rays of the sun as the South Pole tilts towards it.
- As the sun's rays fall vertically at the Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S), a larger portion of the Southern Hemisphere gets light. The sun does not set below the Antarctic Circle. Therefore, it is summer in the Southern Hemisphere with longer days and shorter nights.
- The reverse happens in the Northern Hemisphere. This position of the earth is called the Winter Solstice.

2. Option (d) is correct

Explanation:

- The portion of the earth facing the sun would always experience day, thus bringing continuous warmth to the region and later becoming desert.
- The other half would remain in darkness and be freezing cold all the time.
- Life would not have been possible in such extreme conditions.
- In both extremes, vegetation cannot grow.

3. Option (a) is correct

Explanation:

- On 21st June, the Northern Hemisphere is tilted towards the sun. The rays of the sun fall directly on the Tropic of Cancer.

- The North Pole is inclined towards the sun and the places beyond the Arctic Circle experience continuous daylight for about six months.
- The longest day and the shortest night at these places occur on 21st June.
- The nights are longer than the days. This position of the earth is called the Summer Solstice.

4. Option (a) is correct

Explanation:

- On 21st March and September 23rd, direct rays of the sun fall on the equator. At this position, neither of the poles is tilted towards the sun; so, the whole earth experiences equal days and nights. This is called an equinox.
- On 23rd September, it is autumn season in the Northern Hemisphere and spring season in the Southern Hemisphere.

LEVEL-3 : PREVIOUS YEARS

1. Option (d) is correct.

Explanation: The Earth's axis of rotation (Polar axis) is always inclined at an angle of 23.5° from the elliptic axis.

2. Option (c) is correct

Explanation: Reason for seasonal changes is a revolution of the earth on its axis with $23\frac{1}{2}^{\circ}$ inclinations.

3. Option (a) is correct

Explanation:

- On 21st June, the Northern Hemisphere is tilted towards the sun.
- The rays of the sun fall directly on the Tropic of Cancer. As a result, these areas receive more heat.
- The areas near the poles receive less heat as the rays of the sun are slanting.
- The North Pole is inclined towards the sun and the places beyond the Arctic Circle experience continuous daylight for about six months. It means sun does not set below the horizon at the Arctic Circle.

4

MAPS

Map

- Map is the representation or a drawing of earth's surface or a part of it which is drawn on a flat surface according to a scale.
- A globe is very useful to study of the earth but map is useful to study the part of earth and its physical, political and other features.
- Atlas is a collection of many maps with various sizes, measurements drawn on different scale.
- Maps show more information than a globe. Some of them are:

Physical Maps: It shows natural features of the Earth like mountains, plateaus, plains and oceans, etc.

Political Maps: It shows states, cities, towns, etc.

Thematic Maps: It focuses on specific informations such as roads, rainfall maps, map of forests, etc.

- The three components of Maps are Distance, Direction and Symbols.

Components of Maps

Distance

- In order to represent a large distance on a sheet, we need to reduce the scale.
- Scale is the ratio between actual distance on the ground and the distance shown on the map.
- To represent large area (like continents) and small area (like village or town); we use the small scale map and large scale map respectively.

Direction

- Map contains an arrow marked with the letter 'N' at the upper right corner. This shows north direction and known as north line.
- There are four major North, South, East and West directions. They are called as cardinal points.
- Compass is used to find out direction because the magnetic needle always point towards north-south direction.

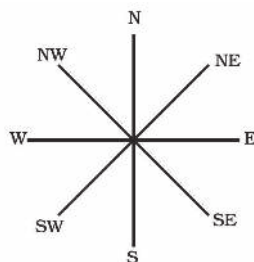


Figure: Cardinal Directions

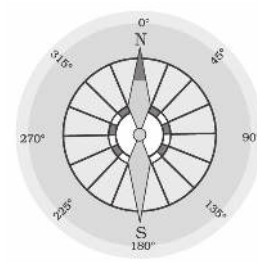


Figure: A compass

Symbols

- It is not possible to draw on a map the actual shape and size of different features such as buildings, roads, bridges, trees, railway lines or a well.
- They are shown by using certain letters, shades, colours, pictures and lines. These symbols give a lot of information in a limited space.
- There is an international agreements regarding use of symbols. These are conventional symbols.

Railway Line : Broad gauge, Metre gauge, Railway station	
Roads : Metalled, Unmetalled	
Boundary : International, State, District	
River, Well, Tank, Canal, Bridge	
Temple, Church, Mosque, Chhatri	
Post Office, Post & Telegraph Office, Police Station	
Settlement, Graveyard	
Trees, Grass	

Figure: Conventional Symbols

Sketch

- A sketch is a drawing mainly based on memory and spot observation and not to scale.
- A rough drawing is drawn without scale is called a sketch map.

Plan

- A plan is a drawing of a small area on a large scale.

QUESTIONS

LEVEL-1 : MODERATE

- The distribution of mountains is shown in
(a) Physical Map (b) Thematic Map
(c) Political Map (d) Globe
- A device compass is used
(a) To measure the time
(b) To measure the distance
(c) To find direction
(d) To find water

LEVEL-2 : ADVANCED

- Consider the following statements:
 - A globe can be useful when we want to study the earth as a whole.
 - A map is a representation or a drawing of the earth's surface or a part of it drawn on a flat surface.
 Which of the statements given above is/are not correct?
 (a) 1 only (b) 2 only
 (c) Both 1 and 2 (d) Neither 1 nor 2

- Consider the following pairs:
 - Physical Maps : Mountains, plateaus, plains, rivers, oceans
 - Political Maps : Cities, towns and villages, countries and states
 - Thematic Maps : Specific information; such as road

Select the correct answer using the codes given below:

- (a) 1 and 2 only (b) 2 and 3 only
 (c) 1 and 3 only (d) 1, 2 and 3
- Which of the following are the parts of Cardinal Points?

- | | |
|---------------|---------------|
| 1. East | 2. North |
| 3. South-East | 4. North-West |

Select the correct answer using the codes given below:

- (a) 1 and 2 only (b) 2 and 3 only
 (c) 3 and 4 only (d) 1 and 4 only
- Which of the following are intermediate directions?

- | | |
|---------------|---------------|
| 1. North-East | 2. South-East |
| 3. South-West | 4. North |

Select the correct answer using the codes given below:

- (a) 1 and 3 only (b) 2, 3 and 4 only
 (c) 1, 2 and 3 only (d) 1, 3 and 4 only

ANSWERS WITH EXPLANATION

LEVEL-1 : MODERATE

- Option (a) is correct.**
Explanation: Maps showing natural features of the earth such as mountains, plateaus, plains, rivers, oceans etc. are called physical or relief maps.
- Option (c) is correct**
Explanation:
 - A compass is used to find out the direction of a place.
 - Its magnetic needle always points towards north-south direction

LEVEL-2 : ADVANCED

- Option (d) is correct.**
Explanation:
 - A globe can be useful when we want to study the earth as a whole.
 - A map is a representation or a drawing of the earth's surface or a part of it drawn on a flat surface according to a scale.

- Option (d) is correct**

Explanation: Physical Maps: Maps showing natural features of the earth such as mountains, plateaus, plains, rivers, oceans etc. are called physical or relief maps.

Political Maps: Maps showing cities, towns and villages, and different countries and states of the world with their boundaries are called political maps. **Thematic Maps:** Some maps focus on specific information; such as road. There is a scale. It may be used for measuring distance between places.

- Option (a) is correct**

Explanation:

- There are four major directions, North, South, East and West. They are called cardinal points.
- Other four intermediate directions are north-east (NE), southeast (SE), south-west (SW) and north-west (NW).

- Option (c) is correct**

Explanation:

- There are four major directions, North, South, East and West. They are called cardinal points.
- Other four intermediate directions are north-east (NE), southeast (SE), south-west (SW) and north-west (NW).

MAJOR DOMAINS OF THE EARTH

Major parts

- **Lithosphere:** Solid portion of the earth on which we live.
- **Atmosphere:** The gaseous layers that surround the Earth.
- **Hydrosphere:** A large portion of the earth's surface is covered by water.
- **Biosphere:** A narrow area where we find land, water and air, which consists of all forms of life.

Lithosphere

- It consists of rocks of the crust and a thin layer of soil which sustains life.
- Earth surface is divided in continents and oceans.
- The level of seawater remains same everywhere, therefore we measure the elevation of land from the sea level.
- The highest mountain peak Mt. Everest is 8, 848 metres from the sea level.
- The greatest depth of 11,022 metres is recorded at Marianna Trench in the Pacific Ocean.

Continents

➤ Asia

1. It is the largest continent which covers one-third of total land areas of the earth and lies in the Eastern Hemisphere.
2. It is separated from Europe by the Ural Mountains on the west. Tropic of Cancer passes through this continent.
3. The combined landmass of Asia and Europe is called Eurasia.

➤ Europe

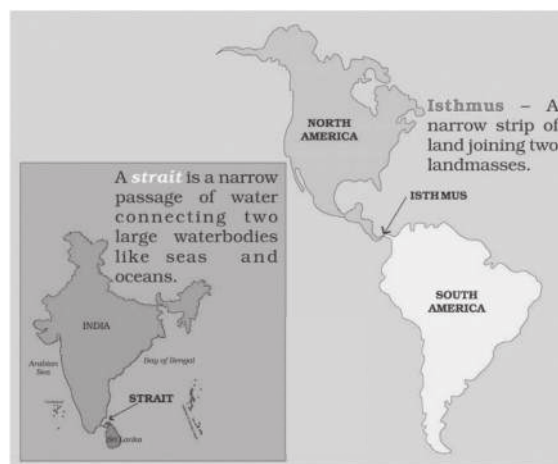
1. It is much smaller than Asia and lies in the west of Asia.
2. The Arctic Circle passes through it.
3. It is bounded by water bodies on three sides.

➤ Africa

1. It is the second-largest continent.
2. It is the only continent through which Tropic of Cancer, Equator and Tropic of Capricorn pass.
3. The world's largest desert, Sahara is located on this continent.
4. It is bounded by oceans and seas on all sides.
5. The world's longest river the Nile, flows through Africa.

➤ North America

1. It is the third-largest continent which is linked with South America by a narrow strip called the Isthmus of Panama.



This map is not to scale and is for reference only.

Figure : Isthmus and Strait

2. It completely lies in the Northern and Western Hemisphere and is surrounded by three oceans.

➤ South America

1. It lies mostly in the Southern Hemisphere.
2. It is bounded by two oceans from the east and west sides.
3. The largest Mountain range, Andes runs through its length from north to south.

➤ Australia

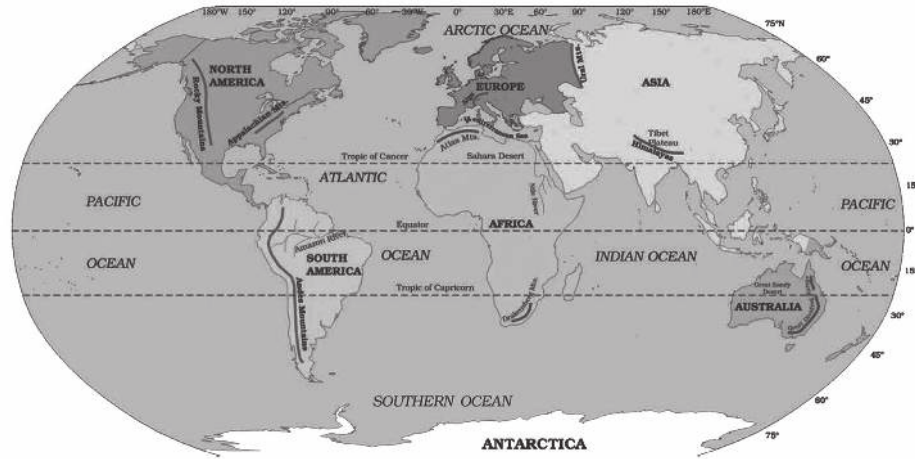
1. It is the smallest continent and surrounded by ocean on all sides, therefore, called island continent.

➤ Antarctica:

1. It completely lies in the Southern Hemisphere.
2. It is permanently covered with thick ice sheets where no human settlement exists.
3. India's two Research Stations, Maitri and Dakshin Gangotri are stationed there.

Hydrosphere

- More than 71 percent of Earth is covered with water and 29 per cent with land.
- Hydrosphere consists of all forms of water. It comprises of Lakes, Ice in glacier, Ground water and Water vapour in atmosphere.
- More than 97% of earth's water is salty and major portion of the rest of the water is in the form of ice sheets, glacier & under the ground and very small percentage is available as fresh water for human use.



This map is not to scale and is for reference only.

Figure: The World : Continents and Oceans

Oceans

- The four major oceans are:
 1. The Pacific Ocean
 2. The Atlantic Ocean
 3. The Indian Ocean
 4. The Southern Ocean
 5. The Arctic Ocean
- Three chief movements of the ocean's water are the wave, the tide and the ocean current.
- **Pacific Ocean**
 1. It is the largest ocean that spread over one-third of the earth.
 2. It is almost circular in shape and bounded by Asia, Australia, North America and South America.
- **Atlantic Ocean:**
 1. It is 'S' shaped and the second largest ocean in the world.



Figure: Indented coastline of the Atlantic Ocean

2. It is bounded by North and South Americas on the western side and Europe and Asia on eastern side.
 3. Its coastline is irregular and highly indented which provides ideal location for natural harbours and ports.
 4. It is the busiest Ocean.
- **Indian Ocean:**
 1. It is the only ocean which is named after a country that is India.

2. It is bounded by Asia, Africa and Australia.
 3. It is almost triangular shaped.
- **Southern Ocean**
 1. It encircles the continent of Antarctica.
 2. It extends northward to 60 degrees south latitude.
 - **Arctic Ocean:**
 1. It is located within the Arctic Circle and surrounded the North Pole.
 2. It is connected with Pacific Ocean by a narrow and shallow stretch of water called Bering strait.
 3. It is bounded by northern coasts of North America and Eurasia.

Atmosphere

- It is a layer of gas that is an important and integral aspect of the planet which protects us from harmful effect of the Sun's rays.
- It extends up to 1600 km which is divided into five layers based on composition, temperature and other properties.
- The layers starting from the earth surface are called the troposphere, the stratosphere, the mesosphere, the thermosphere and the exosphere.
- The atmosphere is composed of nitrogen 78 per cent, oxygen 21 per cent and other gases (carbon dioxide, argon and others) 1 per cent.
- Oxygen is used for breathing and nitrogen is important for the growth of life.
- Carbon dioxide absorbs the heat radiation and keeps earth warm and essential for the growth of plants.

Biosphere

- It is a narrow zone of contact between land, water and air and is also called zone of life.
- All organisms are linked to each other and to the biosphere for survival.
- The organisms in the biosphere are broadly classified in Plant kingdom and Animal kingdom.
- Carbon dioxide is an important component of the air but increase in its amount leads to global warming.

QUESTIONS

LEVEL-1 : MODERATE

- Which of the continent is known as Island Continent?
(a) Asia (b) Europe
(c) Australia (d) South America
- The height of the Mt. Everest is:
(a) 8800 metres (b) 8848 metres
(c) 8880 metres (d) 7888 metres
- Marianna Trench is located in the
(a) Indian Ocean (b) Arctic Ocean
(c) Atlantic Ocean (d) Pacific Ocean
- Andes Mountains are located in which of the following continents?
(a) Asia (b) Europe
(c) South America (d) Africa
- Which of the following is not correctly matched?
(a) Ural Europe
(b) Rocky Mountains North America
(c) Alps South America
(d) Himalaya Asia

LEVEL-2 : ADVANCED

- Consider the following statements:
1. Lithosphere comprises continents and oceanic basins.
2. Biosphere is a narrow strips of the meeting points of Lithosphere, Hydrosphere and Atmosphere.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements:
1. Asia is separated from Europe by the Alps Mountains on the west.
2. The world's longest river the Nile, flows through Africa.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements:
1. The Arctic Ocean is connected with Atlantic Ocean by a narrow stretch of shallow water known as Berring strait.
2. The shape of the Indian Ocean is almost circular and bounded by Asia, Africa and Australia.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

- With reference to Atlantic Ocean, consider the following statements:

- It is spread over one third of the earth.
- It is surrounded by the North and South Americas, Europe and Africa.
- The coastline of Atlantic Ocean is highly indented which enables natural harbours and ports.

Which of the statements given above is/are correct?

- 1 and 2 only
 - 2 only
 - 3 only
 - 2 and 3 only
- Hydrosphere consists:
1. Rivers
2. Ice in glaciers
3. Underground water
4. The water vapour in atmosphere
Select the correct answer using the coed given below:
(a) 1, 2 and 3 only (b) 2 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

- Consider the following statements:
1. Nitrogen 78 per cent, oxygen 21 per cent and other gases comprise 1 per cent by volume.
2. Carbon dioxide absorbs heat radiated by the earth and keeping the planet warm. It is also essential for the growth of plants.

Which of the statements given above is/are not correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

LEVEL-3 : PREVIOUS YEARS

- Which one of the following continents has the largest number of countries? [UPPSC]
(a) Africa (b) Europe
(c) Asia (d) South America
- Which of the following countries is not located on the Continent of Africa? [UPPSC]
(a) Gabon (b) Guinea
(c) Guinea Bissau (d) Guyana
- Which of the following is the largest mountain range? [UPPSC]
(a) The Rocky (b) The Alps
(c) The Himalayas (d) The Andes
- Which of the following mountains is located in Germany? [UPPSC]
(a) Black Forest (b) Atlas
(c) Pyrenees (d) Apennines

ANSWERS WITH EXPLANATION

LEVEL-1 : MODERATE

- Option (c) is correct.**
Explanation:
• Australia is the smallest continent that lies entirely in the Southern Hemisphere.

- Option (b) is correct**
Explanation: The highest mountain peak Mt. Everest is 8,848 metres above the sea level.
- Option (d) is correct**
Explanation: The greatest depth of 11,022 metres is recorded at Marianna Trench in the Pacific Ocean.

4. **Option (c) is correct**

Explanation: The Andes Mountains is located in the South American continent.

5. **Option (c) is correct**

Explanation: Alps Mountains are situated in Europe, not in South America.

LEVEL-2 : ADVANCED1. **Option (c) is correct.**

Explanation:

- There are two main divisions of the earth's surface. Large landmasses are known as continent and the huge water bodies are called the ocean basins. Hence, statement 1 is correct.
- Biosphere is a narrow zone where land (Lithosphere), water (hydrosphere) and Air (Atmosphere) meet and form a favourable condition for the evolution of the life. Hence, statement 2 is correct.

2. **Option (b) is correct**

Explanation:

- Asia is separated from Europe by the Ural Mountains on the west. The combined landmass of Europe and Asia is called the Eurasia. Hence, statement 1 is not correct.
- You will notice that the world's longest river the Nile, flows through Africa. Hence, statement 2 is correct.

3. **Option (d) is correct**

Explanation:

- The Arctic Ocean is located within the Arctic Circle and surrounds the North Pole. The Arctic Ocean is connected with Pacific Ocean by a narrow stretch of shallow water known as Bering strait. Hence, Statement 1 is not correct.
- The Indian Ocean is the only ocean named after a country, that is, India. The shape of ocean is almost triangular. In the north, it is bound by Asia, in the west by Africa and in the east by Australia. Hence, statement 2 is not correct.

4. **Option (d) is correct**

Explanation:

- The Atlantic Ocean is the second largest Ocean in the world. It is 'S' shaped. Pacific is spread over one third of the earth. Hence, statement 1 is not correct.
- It is flanked by the North and South Americas on the western side, and Europe and Africa on the eastern side. Hence, statement 2 is correct.
- The coastline of Atlantic Ocean is highly indented. This irregular and indented coastline provides ideal location for natural harbours and ports. From the point of view of commerce, it is the busiest Ocean. Hence, Statement 3 is correct.

5. **Option (d) is correct**

Explanation:

- Hydrosphere consists of water in all its forms.
- As running water in oceans, rivers, and in lakes, ice in glaciers, underground water and the water vapour in atmosphere, all comprise the hydrosphere.

6. **Option (d) is correct**

Explanation: The earth is surrounded by a layer of gas called the atmosphere.

- The atmosphere is composed mainly of nitrogen and oxygen, which make up about 99 per cent of clean air.
- Nitrogen 78 per cent, oxygen 21 per cent and other gases like carbon dioxide, argon and others comprise 1 per cent by volume. Hence, statement 1 is correct.
- Oxygen is the breath of life while nitrogen helps in the growth of living organisms.
- Carbon dioxide, though present in minute amount, is important as it absorbs heat radiated by the earth, thereby keeping the planet warm. It is also essential for the growth. Hence, statement 2 is correct.

LEVEL-3 : PREVIOUS YEARS1. **Option (a) is correct.**

Explanation:

Continents	Number of Countries
Africa	54
Europe	51
Asia	50
North America	23
South America	12

2. **Option (d) is correct**

Explanation:

- Gabon, Guinea and Guinea Bissau are the part of the Africa continent.
- Guyana is located in the South America Continent.

3. **Option (d) is correct**

Explanation: The Andes is the largest mountain range in the world. It is located on the west coast of the South America continent.

4. **Option (a) is correct**

Explanation:

- Black Forest Mountain is located in Germany.
- Feldberg is the highest peak of this Mountain range.

6

MAJOR LANDFORMS OF THE EARTH

Introduction

- The earth has an infinite variety of landforms. These landforms are the result of the two processes.
- The first: the internal process that leads to the upliftment and sinking of the earth's surface.
- The second is the external process that leads to continuous wearing down and rebuilding of the land surface.
- **Erosion:** It is the process of wearing away of the earth's surface.
- **Deposition:** It is the process of rebuilding of the earth's surface.

Mountains

- It is any natural elevation of the Earth's surface.
- Many mountain systems consist of a series of parallel ranges extending over hundreds of kilometers like the Himalayas, the Alps, and the Andes are mountain ranges of Asia, Europe and South America, respectively.
- There are three types of mountains– Fold Mountains, Block Mountains and the Volcanic Mountains.
- The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks.

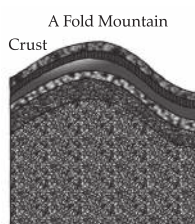


Figure: Fold Mountains (Himalayas)

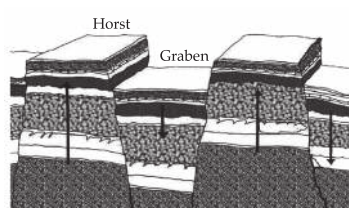


Figure: A Block Mountain

- The Aravali range in India is one of the oldest fold mountain systems in the world.
- Block Mountains are created when large areas are broken and displaced vertically. The uplifted blocks are termed as horsts and the lowered blocks are called graben.
- Volcanic mountains are formed due to volcanic activity. Mt.Kilimanjaro in Africa and Mt.Fujiyama in Japan are examples of such mountains.

Plateaus

- A plateau is an elevated flat land. It is a flat-topped table land standing above the surrounding area like the East African Plateau in Kenya, Tanzania and Uganda, the Western plateau of Australia and Tibet.
- Tibet plateau is the highest plateau in the world with a height of 4,000 to 6,000 metres above the mean sea level.
- The Deccan plateau in India is one of the oldest plateaus.

Plains

- Plains are large stretches of flat land. They are, generally, not more than 200 metres above mean sea level.
- The river deposit consists of stones, sand and silt along their courses and in their valleys. Plains are made from these deposits.
- Generally, plains are very fertile. Construction of transport network is easy. Thus, these plains are very thickly-populated regions of the world.
- Plains are the most useful areas for human habitation. Due of fertile soils, the land is highly productive for cultivation e.g., the Indo-Gangetic plains.

QUESTIONS

LEVEL-1 : MODERATE

- Which of the following is not a Fold Mountain?
 - The Himalayas
 - The Alps
 - The Aravali
 - The Vosges
- The Horsts and Graben are associated with which of the following type of mountains?
 - Fold Mountains
 - Block Mountains
 - Volcanic mountains
 - Old fold Mountains
- Mt. Fujiyama is located in
 - Germany
 - France
 - South Korea
 - Japan
- Mauna Kea, an undersea mountain is located in
 - Pacific Ocean
 - Atlantic Ocean
 - Indian Ocean
 - Arctic Ocean
- The Highest Plateau in the world is
 - Deccan plateau
 - East African plateau
 - Tibet plateau
 - Western plateau of Australia
- Jog fall is located in which of the following states?
 - Kerala
 - Karnataka
 - Jharkhand
 - Chhattisgarh

LEVEL-2 : ADVANCED

- Consider the following statements:
 - The internal process leads to the upliftment and sinking of the earth's surface.
 - The external process is the continuous wearing down and rebuilding of the land surface.
 Which of the statements given above is/are correct?

(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
- Consider the following statements:
 - Mountains are steep sloped, have less land for farming and harsh climate areas.
 - A steep hill with an elevation of more than 600 metres is termed as a plateau.
 Which of the statements given above is/are correct?

(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
- Which of the following mountains are Old Fold Mountains?
 - The Appalachians 2. Ural Mountains
 - Alps 4. Himalayan Mountain
 Select the correct answer using the codes given below:

(a) 1 and 2 only (b) 2 and 3 only
(c) 3 and 4 only (d) 1 and 4 only
- Consider the following statements:
 - The uplifted blocks are termed as graben and the lowered blocks are called horsts.
 - The Rhine valley and the Vosges Mountain in Europe are examples of such mountain systems.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
- Which of the following is/are the Volcanic Mountains?
 - Mt. Alps
 - Mt. Kilimanjaro
 - Mt. Fujiyama
 Select the correct answer using the code given below:

(a) 1 only (b) 3 only
(c) 2 and 3 only (d) 1 and 3 only

LEVEL-3 : PREVIOUS YEARS

- Which of the following mountains is located in Italy? [UPRO/AO]

(a) Apennine (b) Pyrenees
(c) Dinaric Alps (d) Zura
- Pyrenees Mountain Range separates the countries [BPSC]

(a) Spain and France
(b) Spain and Portugal
(c) France and Germany
(d) Germany and Switzerland
(e) None of these /More than one of the above
- Which of the following is a basic landform? [Uttarakhand PSC]

(a) Volcanic cone (b) Residual Mountain
(c) Monadnock (d) Erosional Waterfall
- Telegraphic Plateau is a part of [UPPSC]

(a) North Atlantic Ridge (b) South Atlantic Ridge
(c) Indian Ocean Ridge (d) None of these

ANSWERS WITH EXPLANATION**LEVEL-1 : MODERATE**

- Option (d) is correct.**
Explanation:
 - The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks.
 - The Aravali range in India is one of the oldest fold mountain systems in the world.
 - The Rhine valley and the Vosges Mountain in Europe are examples of Block mountain systems.
- Option (b) is correct**
Explanation: Block Mountains are created when large areas are broken and displaced vertically. The uplifted blocks are termed as horsts and the lowered blocks are called graben.
- Option (d) is correct**
Explanation: Volcanic mountains are formed due to volcanic activity. Mt.Kilimanjaro in Africa and Mt.Fujiyama in Japan are examples of such mountains.

- Option (a) is correct**
Explanation: Mauna Kea (Hawaii) in the Pacific Ocean is an undersea mountain. It is higher than Mount Everest being 10,205 metres high.
- Option (c) is correct**
Explanation:
 - The Deccan plateau in India is one of the oldest plateaus.
 - The East African Plateau in Kenya, Tanzania and Uganda and the Western plateau of Australia are other examples.
 - The Tibet plateau is the highest plateau in the world with a height of 4,000 to 6,000 metres above the mean sea level.
- Option (b) is correct**
Explanation: In India, the Hundru falls in the Chhotanagpur plateau on the river Subarnarekha and the Jog falls in Karnataka are examples of waterfalls.

LEVEL-2 : ADVANCED**1. Option (c) is correct.****Explanation:**

- The internal process leads to the upliftment and sinking of the earth's surface at several places. Hence, statement 1 is correct.
- The external process is the continuous wearing down and rebuilding of the land surface. Hence, statement 2 is correct.
- The wearing away of the earth's surface is called erosion.
- The surface is being lowered by the process of erosion and rebuilt by the process of deposition.

2. Option (a) is correct**Explanation:**

- In some mountains, there are permanently frozen rivers of ice. They are called glaciers. There are some mountains you cannot see as they are under the sea.
- Because of harsh climate, less people live in the mountain areas. Since the slopes are steep, less land is available for farming. Hence, statement 1 is correct.
- A hill is a land surface that rises higher than the surrounding area. Generally, a steep hill with an elevation of more than 600 metres is termed as a mountain. Hence, statement 2 is not correct.

3. Option (a) is correct**Explanation:**

- The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks.
- The Aravali range in India is one of the oldest fold mountain systems in the world.
- The range has considerably worn down due to the processes of erosion.
- The Appalachians in North America and the Ural mountains in Russia have rounded features and low elevation. They are very old fold mountains.

4. Option (b) is correct**Explanation:**

- Block Mountains are created when large areas are broken and displaced vertically.
- The uplifted blocks are termed as horsts and the lowered blocks are called graben. Hence, statement 1 is **not** correct.
- The Rhine valley and the Vosges Mountain in Europe are examples of such mountain systems. Hence, statement 2 is correct.

5. Option (c) is correct**Explanation:**

- Volcanic mountains are formed due to volcanic activity. Mt. Kilimanjaro in Africa and Mt. Fujiyama in Japan are examples of such mountains.
- Alps Mountain is a fold mountain not a volcanic mountain.

LEVEL-3 : PREVIOUS YEARS**1. Option (a) is correct.****Explanation:**

- Apennine Range is located in Italy.
- Its stretches for hundreds of kilometres from the north to the south along the spine of the country

2. Option (a) is correct**Explanation:**

- The Pyrenees are a mountain range between France and Spain.
- They stretch 270 miles (435km) from the Bay of Biscay to the Mediterranean Sea.

3. Option (a) is correct

Explanation: The volcanic cone is a basic landform. Due to the volcanic eruption, ashes and lava come out from cylinders of lava which forms a conical hill.

4. Option (a) is correct

Explanation: Telegraphic Plateau is a part of North Atlantic Ridge. It is between the south of Greenland and Iceland.

Geographical Extension

- India is a country of vast geographical expanse. In the north, it is bound by the lofty Himalayas.
- The Arabian Sea in the west, the Bay of Bengal in the east and the Indian Ocean in the south, wash the shores of the Peninsular India.
- India has an area of about 3.28 million sq. km.
- The north-south extent from Kashmir to Kanyakumari is about 3,200 km.
- And the east-west extent from Arunachal Pradesh to Kuchchh is about 2,900 km.

Location Setting

- India is located in the northern hemisphere.
- The Tropic of Cancer (23°30'N) passes almost halfway through the country.
- From south to north, main land of India extends between 8°4'N and 37°6'N latitudes.
- From west to east, India extends between 68°7'E and 97°25'E longitudes.

India's Neighbours

- There are seven countries that share land boundaries with India viz. Afghanistan, Bangladesh, Bhutan, China, Myanmar, Nepal and Pakistan.
- India has two island neighbours viz. Sri Lanka and Maldives.
- Sri Lanka is separated from India by the Palk Strait.



This map is not to scale and is for reference only.

Figure: India and its neighbouring countries

Political and administrative divisions

- India is a vast country. For administrative purposes, the country is divided into 28 States and 8 Union Territories.
- New Delhi is the national capital.

Physical Divisions

- India is marked by a diversity of physical features such as mountains, plateaus, plains, coasts and islands.

The Himalayan Mountains

- The Himalayan Mountains are divided into three main parallel ranges.
- The northernmost is the Great Himalaya or Himadri which comprises of highest peaks
- Middle Himalaya or Himachal lies to the south of Himadri where many popular hill stations are situated.
- The Shiwalik is the southernmost range.

The Northern Indian plains

- The Northern Indian plains lie to the south of the Himalayas.
- These are formed by the alluvial deposits laid down by the rivers– the Indus, the Ganga, the Brahmaputra and their tributaries.
- These river plains provide fertile land for cultivation. That is the reason for the high concentration of population in these plains.
- Great Indian Desert:
 1. In the western part of India lies the Great Indian Desert.
 2. It is a dry, hot and sandy stretch of land. It has very little vegetation.
- The Peninsular Plateau:
 1. Aravali hills, one of the oldest ranges of the world, border it on the north-west side.
 2. The Vindhya and the Satpuras are the important ranges.
 3. The rivers Narmada and Tapi are west flowing rivers that drain into the Arabian Sea.
- Western Ghats vs. Eastern Ghats:
 1. While the Western Ghats are almost continuous, the Eastern Ghats are broken and uneven.
 2. The plateau is rich in minerals like coal and iron-ore.

3. The western coastal plains are very narrow. The eastern coastal plains are much broader.
- Rivers:
 1. The rivers Mahanadi, Godavari, Krishna and Kaveri drain into the Bay of Bengal.
 2. These rivers have formed fertile deltas at their mouths.
 3. The Sunderban delta is formed where the Ganga and Brahmaputra flow into the Bay of Bengal.
- Islands:
 1. Two groups of islands also form part of India.
 2. Lakshadweep Islands are located in the Arabian Sea. These are coral islands located off the coast of Kerala.
 3. The Andaman and the Nicobar Islands lie to the southeast of the Indian mainland in the Bay of Bengal.
 4. The Andaman and the Nicobar Island groups of islands were affected by the Tsunami in 2004.
 5. Tsunami is a huge sea wave generated due to an earthquake on the sea floor.

QUESTIONS

LEVEL-1 : MODERATE

1. India has an area of about
 - (a) 4.28 million sq. km
 - (b) 3.58 million sq. km
 - (c) 3.78 million sq. km
 - (d) 3.28 million sq. km
2. What is the latitudinal extend of India?
 - (a) 10°4'N and 47°6'N latitudes
 - (b) 8°4'N and 37°6'N latitudes
 - (c) 8°84'N and 77°96'N latitudes
 - (d) 28°4'N and 137°6'N latitudes
3. Consider the following statements:
 1. The Western coastal plain is broader than eastern coastal plain.
 2. The Western Ghats are almost continuous but the Eastern Ghats are broken and uneven.

Which of the statements given above is/are correct?

 - (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
4. Which of the following is associated with Shiwalik Hills?
 - (a) Western Ghats
 - (b) Vindhyan Range
 - (c) Himalaya
 - (d) Satpura
5. Which of the following rivers does not drain into Bay of Bengal?
 - (a) Mahanadi
 - (b) Godavari
 - (c) Narmada
 - (d) Krishna

LEVEL-2 : ADVANCED

1. Through which of the following states, Tropic of Cancer passes?
 1. Madhya Pradesh
 2. Chhattisgarh
 3. Uttar Pradesh
 4. Jharkhand

Select the correct answer using the codes given below:

 - (a) 1, 2 and 3 only
 - (b) 2 and 3 only
 - (c) 1, 2 and 4 only
 - (d) 1, 2, 3 and 4
2. Consider the following statements:
 1. There are seven countries that share land boundaries with India.
 2. India shares largest land boundary with China.

Which of the statements given above is/are correct?

- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
3. Arrange the following Mountains/Hills from north to south.
 1. Vindhyas
 2. Satpura Ranges
 3. Nilgiri
 4. Anaimalai hills

Select the correct answer using the codes given below?

 - (a) 2-1-4-3
 - (b) 2-1-3-4
 - (c) 1-2-3-4
 - (d) 1-2-4-3
 4. Consider the following statements:
 1. The world's highest peaks are located in middle Himalayan range.
 2. Many popular hill stations are situated in the Shiwalik.

Which of the following statement given above is/are correct?

- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
5. Which of the following river(s) flow(s) into the Arabian Sea?
 1. Narmada
 2. Tapi
 3. Kaveri

Select the correct answer using the codes given below:

- (a) 1 only
 - (b) 1 and 2 only
 - (c) 3 only
 - (d) 1, 2 and 3
6. Arrange the following rivers from north to south:
 1. Mahanadi
 2. Kaveri
 3. Godavari
 4. Krishna

Select the correct answer using the codes given below:

 - (a) 2-3-1-4
 - (b) 1-3-4-2
 - (c) 2-3-4-1
 - (d) 3-1-4-3

7. Consider the following statements:

1. The Andaman and the Nicobar Islands are coral islands.
2. Tsunami is a huge sea wave generated due to an earthquake on the sea floor which largely affects Lakshadweep Islands.

Which of the following statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

LEVEL-3 : PREVIOUS YEARS

- Which one of the following is the youngest mountain range of India? [UPPSC]
 - Himadri Range
 - Aravali Range
 - Western Range
 - Vindhyan Range
- In which part of Himalaya is 'Karewa' landform found? [MPPSC]
 - North East Himalaya
 - Eastern Himalaya
 - Himachal Uttarakhand Himalaya
 - Kashmir Himalaya
- Which of the following mountain systems of India is the oldest? [UPPSC]
 - Aravalli
 - Himalaya
 - Satpura
 - Nilgiri
- The highest peak of Indian Peninsula is [UPPSC]
 - Ootacamund
 - Anaimudi
 - Doddabetta
 - Mahabaleshwar
- Which of the following mountain ranges is spread over only one state of India? [MPPSC]
 - Aravalli
 - Satpura
 - Ajanta
 - Sahyadri

ANSWERS WITH EXPLANATION**LEVEL-1 : MODERATE**

- Option (d) is correct.**
Explanation:
 - India has an area of about 3.28 million sq. km.
 - The north-south extent from Kashmir to Kanyakumari is about 3,200 km. And the east-west extent from Arunachal Pradesh to Kuchchh is about 2,900 km.
- Option (b) is correct**
Explanation: From south to north, main land of India extends between 8°4'N and 37°6'N latitudes. From west to east, India extends between 68°7'E and 97°25'E longitudes.
- Option (b) is correct**
Explanation:
 - The western coastal plains are very narrow. But the eastern Coastal plains are much broader. Hence, statement 1 is not correct.
 - The Western Ghats are almost continuous but the Eastern Ghats are broken and uneven. The plateau is rich in minerals. Hence statement 2 is correct.
- Option (c) is correct**
Explanation:
 - The northernmost is the Great Himalaya or Himadri. The world's highest peaks are located in this range. Middle Himalaya or Himachal lies to the south of Himadri.
 - Many popular hill stations are situated here.
 - The Shiwalik is the southernmost range of Himalayas.
- Option (c) is correct**
Explanation:
 - The rivers Mahanadi, Godavari, Krishna and Kaveri drain into the Bay of Bengal.
 - The rivers Narmada and Tapi flow through Satpura and Vindhyas ranges. These are west flowing rivers that drain into the Arabian Sea.

LEVEL-2 : ADVANCED

- Option (c) is correct.**
Explanation: The Tropic of Cancer passes through eight states in India:

● Gujarat	● Rajasthan
● Madhya Pradesh	● Chhattisgarh
● Jharkhand	● West Bengal
● Tripura	● Mizoram
- Option (a) is correct**
Explanation:
 - There are seven countries that share land boundaries with India. Hence statement 1 is correct.
 - India and Bangladesh share one of the longest borders of 4,096 km. While border length with China is of 3,488 km. Hence statement 2 is not correct.
- Option (c) is correct**
Explanation: Correct sequence of Mountains/Hills is:

● Vindhyas	● Satpura Ranges
● Nilgiri	● Anaimalai hills
- Option (d) is correct**
Explanation:
 - The Himalayan Mountains are divided into three main parallel ranges.
 - The northernmost is the Great Himalaya or Himadri. The world's highest peaks are located in this range. Hence, statement 1 is not correct.
 - Middle Himalaya or Himachal lies to the south of Himadri. Many popular hill stations are situated here. Hence, statement 2 is not correct.
 - The Shiwalik is the southernmost range.
- Option (b) is correct**
Explanation:
 - The Vindhyas and the Satpuras are the important ranges.
 - The rivers Narmada and Tapi flow through these ranges.

- These are west flowing rivers that drain into the Arabian Sea.

6. Option (b) is correct

Explanation: The rivers Mahanadi, Godavari, Krishna and Kaveri drain into the Bay of Bengal. These rivers have formed fertile deltas at their mouth.

7. Option (d) is correct.

Explanation:

- Two groups of islands also form part of India. Lakshadweep Islands are located in the Arabian Sea. These are coral islands located off the coast of Kerala. Hence, statement 1 is not correct.
- The Andaman and the Nicobar Islands lie to the southeast of the Indian mainland in the Bay of Bengal. Tsunami is a huge sea wave generated due to an earthquake on the sea floor. Tsunami largely affects Andaman & Nicobar islands. Statement 2 is not correct.

LEVEL-3 : PREVIOUS YEARS

1. Option (a) is correct.

Explanation: The northernmost is the Great Himalaya or Himadri. The world's highest peaks are located in this range. It is an example of the new fold mountain.

2. Option (d) is correct

Explanation: The Kashmir Himalayas are famous for Karewa formations, which are useful for the cultivation of Zafran, a local variety of saffron.

3. Option (a) is correct.

Explanation: Aravali Hills region has numerous hill ranges and valleys. Aravali Hills are on the north-west side of the Indian Peninsular plateau. The Vindhya and the Satpuras are the important ranges.

4. Option (b) is correct

Explanation:

- Anaimudi is the highest peak of the Indian Peninsula. It is situated in Idukki district of Kerala.
- Doddabetta - 2623 mtr
- Mahabaleshwar - 1439 mtr
- Ootacamund- 2240 mtr
- Anaimudi - 2695 mtr
- It is part of Western Ghats mountain range.

5. Option (c) is correct

Explanation: The Ajanta range is situated in Maharashtra. It is spread over one state that is Maharashtra.