CHAPTER – I

GEOGRAPHY

The Solar System

The Solar System is centred on the Sun. It consists of a star called the Sun and all the objects that travel around it. The Solar System includes 8 planets, and four major Dwarf planets i.e., Pluto, Charon, Eris (2003 UB 313/xena), Ceres. The eight major planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. Upto 2006 August, Pluto was also considered as the 9th planet. But on August 24, 2006, about 2,500 scientists at The International Astronomical Union's (IAU) meeting in Prague adopted historic new guidelines that demoted Pluto, the smallest and most distant planet, to a secondary category, i.e., a dwarf planet. The status of Pluto discovered in 1930 by the American Clyde Tombaugh, has been contested for many years. The Solar System includes 8 major planets and along with the satellites (not less than 63 moons accompanying the planets) that travel around most of them; (2) planet-like objects called asteroids (hundreds of asteroids); (3) chunks of iron and stone called meteoroids; (4) bodies of dust and foreign gases called 'comets' (thousands of comets); and (5) drifting particles called 'interplanetary dust' and electrically charged gas called 'plasma' that together make up the interplanetary medium.

The Solar System is tucked away in a corner of the Milky Way at a distance of about 30,000 to 33,000 light years from the centre of the galaxy.

The Solar System originated in a primitive solar nebula – a rotating disc of gas and dust. It is from this rotating disc that the planets and the rest of the Solar System evolved.

The Sun

Sun is a shining spherical heavenly body around which the planets rotate. It is one of some 10,000,000 stars which constitute our galaxy. A rather ordinary, middle-age star, the gaseous Sun may reach a temperature of 15.4 million degree Celsius at its core. Its 11 – year cycle is now approaching a solar maximum, a period marked by frequent Sunspots and flares. Just 1 square metre of Sun's surface shines as brightly as 1 million 60 watts bulbs. Sun's hydrogen core converts Hydrogen to Helium at a rate of 600m tonnes/second. In doing so it loses 4m tonnes of its mass/second.

Solar Statistics

Distance from the Earth	149.8 million km
Diameter	1,384,000 km
Core Temperature	15,000,000 k
Photosphere Temperature	5770 k
Rotation as seen from the	
Earth (at the Equator)	25.38 days
(near the Poles)	33 days
Chemical Composition	
Hydrogen	71%
Helium	26.5%
Other elements	2.5%
Age	About 5 billion years
Expected lifetime of a	
normal star	About 10 billion years

The glowing surface of the Sun, which we see is called 'Photosphere'. Above the Photosphere is the 'Chromosphere', so called because of its reddish colour. Beyond this layer is the magnificent 'corona' of the Sun which is visible during eclipses. The 'corona' is the least dense of the Sun's layers.

Sunspots

Sunspots are dark patches noticed on the surface of the Sun. They appear dark because they are cooler (around 1500 ℃) than the surface of the Sun which has a temperature of about 6000 ℃.

Polar Auroras

Polar Auroras are two Auroras, the Aurora Borealis or Northern Lights and the Aurora Australis or Southern Lights. These are lights that sweep across the sky in waves or streamers or folds. They are very often multi-coloured and provide one of the finest spectacles in nature. They occur in the Arctic and the Antarctica regions respectively. But the Northern Lights can be seen as far south as New Orleans in America and the Southern lights as far north as Australia.

Eclipse

The total or partial obscuration of light from a celestial body as it passes through the shadow of another body is known as 'eclipse'.

Equinoxes

Equinoxes or equal nights (and consequently equal days) are the times when the Sun is shining directly overhead at the Equator. March 21 is called the Vernal Equinox and September 23 is called the Autumnal Equinox.

Solstice

Summer Solstice

On June 21, the earth is so located in its orbit that the Sun is overhead on the Tropic of Cancer. The Northern Hemisphere is tipped towards the Sun, having the longest day, while the Southern Hemisphere is tipped away from the Sun, having the shortest day.

Winter Solstice

On 22 December, the earth is in an equivalent position, on the opposite front point, in its orbit. So the Southern Hemisphere is tipped towards the Sun, and the Northern Hemisphere away from it. The Sun is overhead on the Tropic of Capricorn resulting in the shortest day in Northern Hemisphere and longest day in Southern Hemisphere.

Heavenly body	Diameter (in km)	Period of Revolution	Period of Rotation			
			d	h	m	s
Sun	13,92,250		25	09	07	
Mercury	4,849.6	87.97 days	58	15	30	34
Venus	12,032	224.70 days	243	00	14	
Earth	12,032	365.30 days		23	56	04
Mars	6,755.2	68.07 days		24	37	23
Jupiter	1,41,968	11.86 years		9	50	30
Saturn	1,19,296	29.46 years		10	14	
Uranus	52,096	84.01 years		16	10	
Neptune	49,000	164.80 years		18	26	

Heavenly body	Important features	Satellite / Moons	Distance from the Sun (in km)
MERCURY	Second smallest planet, nearest to Sun; Polar regions covered with ice.	Nil	57,909,100
VENUS	Morning Star or Evening Star; Rotates from east to west unlike other planets.	Nil	108,208,900
EARTH	4.6 billion years old 'oblate ellipsoid – shaped'	One (MOON); Only 59% of the Moon's surface visible from the Earth	149,407,000
MARS	Nicknamed Red planet	Two (Phobos and Deimos)	227,940,500
JUPITER	Largest planet	17	778,333,000
SATURN	Second largest planet	22	1,426,978,000
URANUS	Discovered by Sir William Herschel (1781)	15	2,870,991,000
NEPTUNE	Discovered in 1846 by J. G. Galle	8	4,497,070,000

Asteroids

Asteroids are minor planets whose orbits lie between Jupiter and Mars. These are said to be the fragments of a larger planet disrupted long ago. More than 1,400 have been named. Ceres, the first to be discovered, is the largest asteroid having a diameter of 670 km.

Meteors

Meteors are small bodies coming from interplanetary space. They become luminous by friction on entering the Earth's atmosphere, and are popularly called "Shooting Stars".

Meteorites

Meteorites are the larger meteors that reach the Earth. All meteorites were meteors when in flight.

Stars

Stars are Suns or self-luminous bodies, situated at enormous distance from the Solar System. The distances of stars are expressed in light years.

Comet

Comet is a luminous celestial body which moves about the Solar System in elliptical or hyperbolic orbits. Comets are usually accompanied by a long shining tail. Hyperbolic comets are seen only once and they do not reappear. Elliptical comets are periodic and their recurrence can be calculated, as in the case of Halley's Comet.

Nebulae

The clouds of rarefied gas glow due to the radiation of the light of the stars. The radiated clouds of rarefied gas are called 'Nebulae'. Their visibility is hazy and faint.

Earth Data

Superficial area	510,100,500 sq.km
Land surface	148,950,800 sq.km
Water surface	361,149,700 sq.km
Equatorial circumference	40,067 km
Polar circumference	40,000 km
Equatorial diameter	12,754 km
Equatorial radius	6,377 km
Mean distance from the Sun	149,407,000 km
Time of rotation on its own axis	23h,56m,4.09 sec
Period of revolution around the Sun	365 days, 5 hr 48m, 45.51 sec
Inclination of the axis to the plane of the elliptic	23°27'
Escape velocity (i.e., speed necessary to break away from the Earth into outer space)	11.2 m/sec

CONTINENTS

Name	Area (sq.km)	% of Earth's area	Population estimate (in million)	Highest point in meters (from sea-level)		Lowest point in meters (from sea-level)	
Asia	43,998,000	29.5	3,588.9	Everest	8848		
Africa	29,800,000	20.0	778.5	Kilimanjaro	5894	Dead Sea	– 396.8
N.America	21,510,000	16.3	434.8	McKinley	6194	Lake Assai	– 156.1
S.America	17,598,000	11.8	499.5	Aconcagua	6960	Death Valley	– 859
Europe	9,699,550	6.5	729.4	Elbrus	5663	Valdes Penin	– 39.9
Australia	7,699,000	5.2	29.4	Kosciusko	2228	Caspian Sea	– 28.0
Antarctica	13,600,000	9.6	----	Vinson Massif	5140	Lake Eyre	– 15.8

Principal Peaks

Name	Country	Height (m)
Mt. Everest	Nepal-Tibet	8848
K2 (Mt. Godwin Austen)	India(PoK)	8611
Kanchenjunga	Nepal-India	8597
Lhotse	Nepal-India	8511
Nanga Parbat	India	8124
Annapurna	Nepal	8078
Nanda Devi	India	7817
Mt. Kamet	India	7756
Saltoro Kangri	India	7742
Gurla Mandhata	Tibet	7728

Great Deserts

Name	Country	Area in sq.km
Sahara	N. Africa	8,400,000
Libyan	N. Africa	1,550,000
Nubian	N. Africa	260,000
Australian	Australia	1,550,000
Great Victoria	Australia	325,000
Great Sandy	Australia	420,400
Simpson (Arunta)	Australia	310,000
Arabian	Arabia	1,300,000
Gobi	Mongolia, China	1,040,000
Kalahari	Botswana, Namibia	520,000
Takla Makan	China	320,000
Sonoran	USA, Mexico	310,000
Kara Kum	Turkmenistan	272,000
Thar	W. India	260,000
Atacama	N. Chile	180,000

Largest Islands

Name	Area (sq.km)	Location
Australia	7,618,493	Indian Ocean
Greenland	2,175,600	Arctic Ocean
New Guinea	792,500	W. Pacific
Borneo	725,545	Indian Ocean
Malagasy Republic	587,000	Indian Ocean
Baffin Island	476,065	Arctic Ocean
Sumatra	427,300	Indian Ocean

Oceans

Name	Average depth (m)	Area (sq.km)
Pacific	4188	1,66,240,000
Atlantic	3736	86,560,000
Indian	3872	73,430,000
Arctic	1260	13,230,000

Principal Seas

Name	Area (sq.km)
South China Sea	2,974,600
Caribbean Sea	2,753,000
Mediterranean Sea	2,503,000
Bering Sea	2,268,180
Gulf of Mexico	1,542,985

Longest Rivers

Name	Country / Continent	Length (in km)
Nile	Africa	6,650
Amazon	S. America	6,437
Mississippi- Missouri	USA	6,020
Yangtze Kiang	China	5,494
Ob-Irtysh	Russia	5,410
Zaire	Africa	4,700
Lena	Russia	4,400
Hwang Ho	China	4,344
Mackenzie	Canada	4,241
Mekong	Asia	4,180
Niger	Africa	4,180

Largest Lakes

Name	Location	Area (sq.km)
Caspian Sea	CIS, Iran	371,000
Superior	Canada, US	82,350
Victoria	E. Africa	69,500
Tanganyika	E. Africa	32,900
Baikal	Russia	31,500

Highest Waterfalls

Name	Country	Drop (m)
Angel	Venezuela	807
Mongefossen	Norway	774
Kukenaan	Venezuela	610
Utigord	Norway	600
Ribbon	USA	491

Largest Peninsulas

Name	Area in (sq.km)
Arabia	3,250,000
South India	2,072,000
Alaska	1,500,000
Labrador	1,300,000
Scandinavia	800,000
Iberian Peninsula	584,000

CHAPTER – II

THE WORLD

The total surface area of the Earth is 509,700,000 sq.km, of which 29 per cent (148,400,000 sq.km) is land area and the rest 71% (361,300,000 sq.km) is water.

World population in 2016 has been estimated at 7,432,663,275 million. The 6 billion mark was reached on October 12, 1999. The Population Division of UN projects that world population will grow from 6 billion in 1999 to 8.9 billion by 2050.

China is the most populous country accounting for 21 per cent of the world population, followed by India with 16 per cent. Vatican City is at the other extreme with a population of 900 only.

Russia is the largest country in terms of area (1,70,75,000 sq.km) while the smallest is Vatican City (0.44 sq.km).

The Biggest Countries

In Area

Country	Area (sq.km)
Russia	17,075,000
Canada	9,976,139
China	9,561,000
USA	9,372,614
Brazil	8,511,965
Australia	7,682,300
India	3,287,263
Argentina	2,776,654
Kazakshtan	2,717,300
Algeria	2,381,741

In Population (2011)

Country	Population
China	1,349,585,838
India	1,220,800,359
USA	316,668,567
Indonesia	251,160,124
Brazil	201,009,622
Pakistan	193,238,868
Nigeria	174,507,539
Bangladesh	163,654,860
Russia	142,500,842
Japan	127,256,075

The Smallest Countries

In Area

Name	Area (sq.km)	Location
Vatican City	0.44	Europe
Monaco	1.95	Europe
Nauru	21.10	S. Pacific
Tuvalu	26.00	S. Pacific
San Marino	61.00	Europe
Liechtenstein	160.00	Europe
Marshall Islands	181.00	C.Pacific
St.Kitts-Nevis	269.00	E.Caribbean
Maldives	298.00	Indian Ocean
Seychelles	308.00	Indian Ocean

In Population

Country	Population	Location
Vatican City	800	Europe
Nauru	9,434	S. Pacific
Tuvalu	10,698	S. Pacific
Palau	21,108	W. Pacific
Monaco	30,500	Europe
San Marino	32,448	Europe
Liechtenstein	37,009	Europe
St.Kitts-Nevis	51,134	E.Caribbean
Marshal Islands	69,747	N.Pacific Ocean
Dominica	73,286	E.Caribbean

Biggest Economies 2016 (World Bank)

Rank	Country/Region	GDP ($ in trillions) (approximately)
1	The USA	$19 trillion
2	China	$12 trillion
3	Japan	$4.3 trillion
4	Germany	$3.5 trillion
5	The U.K	$3.0 trillion
6	France	$2.5 trillion
7	India	$2.5 trillion
8	Brazil	$1.9 trillion
9	Italy	$1.9 trillion
10	Canada	$1.7 trillion

Top Exporters (2016)

Rank	Country	Exports in Billion Dollars
1	China	2,274
2	USA	1,504
3	Germany	1,329
4	Japan	624
5	Netherlands	567
6	South Korea	526
7	Hong Kong (China)	510
8	France	505
9	U.K	460
10	Italy	459
19	India	267

Top Importers (2016)

Rank	Country	Billion Dollars
1	USA	2,244.00
2	China	2,205.00
3	Germany	987.60
4	Japan	629.80
5	UK	581.60
6	France	525.40
7	Hong Kong	509.50
8	Canada	419.00
9	South Korea	405.10
10	India	402.40

World's Top 10 Receipients of Migrant Remittances (2016) World Bank

Country	Remittances ($ billions)
India	62.7
China	61.0
Philippines	29.9
Mexico	28.5
France	18.9
Nigeria	18.5
Egypt	18.4
Germany	17.6
Pakistan	19.8
Bangladesh	14.9

Top 10 Countries with the highest Military Expenditure in 2016 (Forbes)

Rank	Country	Spending ($ billion)
1	USA	611.0
2	China	215.0
3	Russia	69.2
4	Saudi Arabia	63.7
5	India	55.9
6	France	55.7
7	U.K	48.3
8	Japan	46.1
9	Germany	41.1
10	South Korea	36.8

World Agriculture

Crop/Commodity	Major Producers
1. Rice	China, India, Indonesia
2. Wheat	USA, China
3. Maize	USA, China, Brazil
4. Barley	Russia, Canada
5. Oats	Russia, USA, Canada
6. Rye	Russia, Poland, Germany
7. Millets	India, China
8. Potatoes	Russia, China, India
9. Tomatoes	China, USA
10. Apples	China, USA
11. Dates	Egypt, Iraq, Iran
12. Cassava	Brazil, Indonesia
13. Yam	Nigeria, Ghana
14. Groundnut	India, China
15. Soya Bean	USA, Brazil
16. Pineapple	Thailand, Philippines
17. Tea	India, Sri Lanka, China
18. Coffee	Brazil, Vietnam
19. Cocoa	Ivory Coast, Ghana
20. Sugar Cane	India, China, Brazil
21. Sugar Beet	France, Germany
22. Rubber	Thailand, Malayasia, Indonesia
23. Synthetic Rubber	USA, Japan
24. Oil Palm	Malayasia
25. Coconut	The Philippines, Indonesia, India
26. Olive	Italy, Spain
27. Cotton Seeds	Russia, USA
28. Cotton	USA, China, India

Crop/Commodity	Major Producers
29. Linseed	Canada
30. Tobacco	China, USA, India
31. Wool	Australia, New Zealand
32. Silk	China, India
33. Jute	Bangladesh, China, India
34. Nylon	USA, Japan
35. Rayon	Russia, Japan

World Minerals

	Mineral	Major Producer Country
1.	Iron Ore	China, Brazil, Australia, India
2.	Manganese	China, South Africa, Australia
3.	Coal	USA, China, Russia, Germany/Ruhr basin
4.	Petroleum	Saudi Arabia, Iran, USA, Russia, Kuwait
5.	Gold	South Africa, Russia, Zaire, USA
6.	Diamond	South Africa
7.	Nickel	Australia, Canada
8.	Silver	Canada, Mexico
9.	Mica	USA, Republic of Korea
10.	Copper	Chile, USA, Indonesia
11.	Bauxite	Australia
12.	Uranium	Canada, Australia
13.	Thorium	India, Australia
14.	Lignite	Germany, Russia
15.	Tin	China, Indonesia, Peru
16.	Platinum	Canada, South Africa
17.	Tungsten	Russia, China

CHAPTER – III

INDIA

India, the second most populous and the seventh largest country (area-wise) in the world, lies to the north of the equator between 8° 4' and 37° 6' north latitude , and 68° 7' and 97° 25' east longitude. India measur es 3,214 km from north to south and 2,933 km from east to west with a total land area of 3,287,263 sq.km. It has a land frontier of 15,200 km and a coastline of 7516.5 km. The southern most point is Indira Point in the Andaman and Nicobar Islands.

India shares its political borders with Pakistan and Afghanistan on the west, and Bangladesh and Myanmar to the east. The northern boundary is made up of the Sinkiang province in China, Nepal and Bhutan. India is separated from Sri Lanka by the Palk Straits and the Gulf of Mannar. On this 2.42 per cent of earth's surface live about 16 per cent of world's population.

The Union of India is made up of 29 States (including the recently formed Telangana State from Andhra Pradesh in 2014) and 6 Union Territories and 1 National Capital Territory (Delhi).

Area-wise, Rajasthan is the biggest State (342,239 sq.km), and Goa the smallest (3,702 sq.km).

Population-wise, Uttar Pradesh is the largest State in India and Sikkim the smallest. UP's population is 16.17 per cent of India's total.

India has 6,05,224 villages as against 3,949 towns, and 77 per cent of the population lives in rural areas.

Every man and woman of 18 and over is an elector for the House of the People (Lok Sabha) and respective Legislative Assembly. India has the largest number of persons on the electoral roll.

National Flag

Date of adoption by the Constituent Assembly: 22 July,1947.
Presented to the Nation on: 14 August, 1947.

Description:
The National Flag of India is a horizontal tricolour having a deep saffron (Kesari) band at the top, a white band in the middle, and a dark green band at the bottom. At the centre of the white band, there is a wheel (chakra) which is of navy blue colour. The wheel has 24 spokes and its diameter is approximately equal to the width of the white band. The design of the wheel is that of the Chakra which appears on the abacus of the Sarnath Lion Capitol of Emperor Asoka.

National Emblem

Date of adoption by the Government of India: 26 January, 1950.

Description:
The National Emblem is an adaptation from the Sarnath Lion Capitol of Emperor Asoka as preserved in the Sarnath Museum. The words 'Satyameva Jayate' taken from the 'Mundaka Upanishad' meaning 'Truth Alone Triumphs' are inscribed below the abacus in Devanagari script.

National Anthem

Composer: Rabindranath Tagore
First sung: 27 December, 1911 at Calcutta
First published: January, 1912
Date of adoption by the Constituent Assembly: 24 January, 1950

The National Anthem is the song 'Jana-gana-mana' by Rabindranath Tagore which was published under the title 'Bharat Vidhata' in the 'Tatva Bodhini Patrika'. It was translated by Tagore himself in 1919 under the title 'Morning Song of India'.

National Song

Composer: Bankim Chandra Chatterjee
First sung: 1896 session of the Congress
Date of adoption by the Constituent Assembly: 24 January, 1950 (along with National Anthem)
English translation: Rendered by Sri Aurobindo

The National Song 'Vande Mataram' has been taken from Bankim Chandra Chatterjee's novel 'Ananda Math' published in 1882.

National Calendar (Saka)

From 22 March, 1957 (Saka, 1879), a unified National Calendar, to be used for official purposes, was introduced based on the Saka Era which began with vernal equinox of AD 78. Chaitra is the first and Phalguna the last month of the Saka year.

National Game: Hockey
National Bird: Peacock.
National Flower: Lotus.
National Fruit: Mango
National Animal: Tiger.
National Aquatic Animal: River Dolphin
National River: Ganga
National Tree: Banyan Tree
National Heritage Animal: Elephant

Census of India 2011

Our Census, Our Future

Some Facts about Census 2011

Cost	2,200 crore
Cost per person	18.19
Number of Census Functionaries	2.7 Mn
Number of Languages in which Schedules were canvassed	16

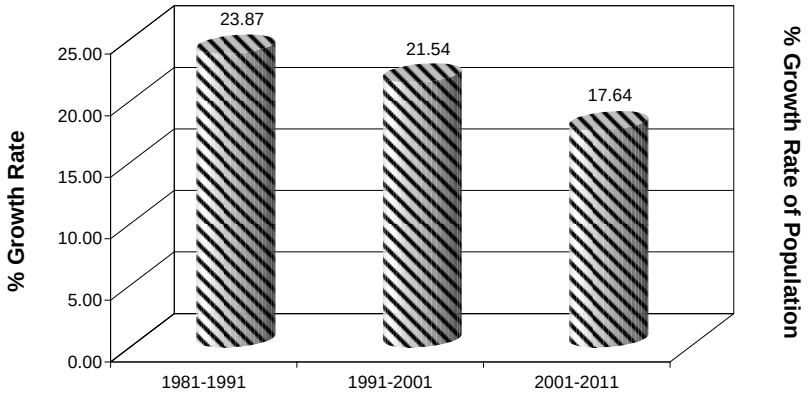
Number of Languages in which Training Manuals prepared	18
Number of Schedules printed	340 Mn
Number of Training Manuals printed	5.4 Mn
Paper utilised	8,000 Million Tonnes
Material moved	10,500 Million Tonnes

Highlights

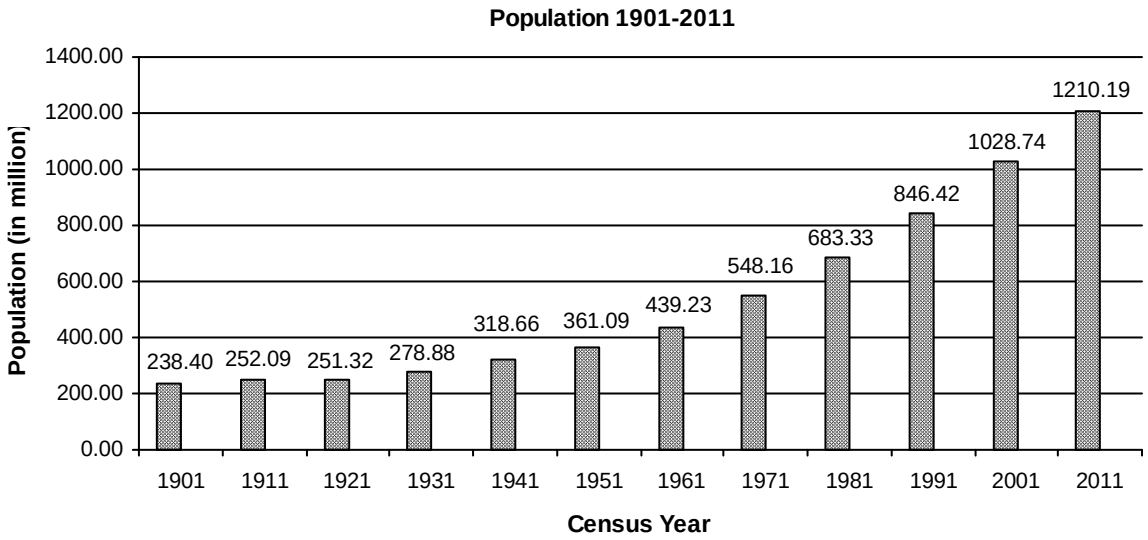
- The population of India has increased by more than 181 million during the decade 2001-2011.
- The absolute addition is slightly lower than the population of Brazil, the fifth most populous country in the world!
- The population of India, at 1210.2 million, is almost equal to the combined population of U.S., Indonesia, Brazil, Pakistan, Bangladesh, and Japan put together (1214.3 million)!

Decadal Population 2001–2011				
	2001	**2011**	**Difference**	**% Growth 2001–2011**
Persons	1,02,87,37,436	1,21,01,93,422	18,14,55,986	17.64
Males*	53,22,23,090	62,37,24,248	9,15,01,158	17.19
Females	49,65,14,346	58,64,69,174	8,99,54,828	18.12

*Males includes males & others.



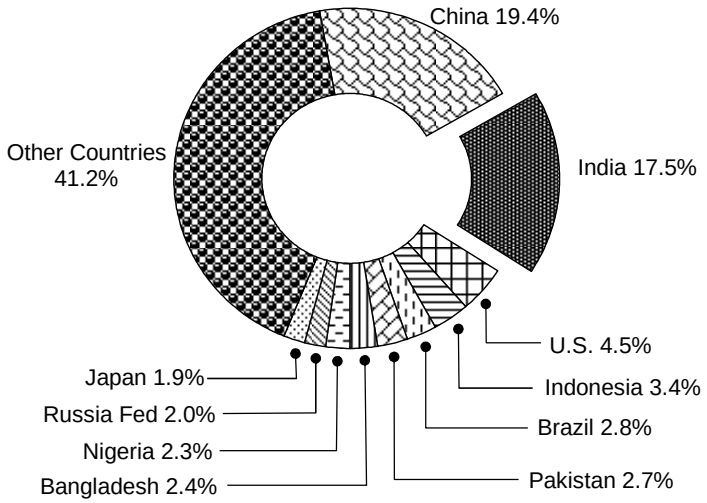
Largest and the Smallest states / UTs			
Top 5 states / UTs		**Bottom 5 states / UTs**	
Uttar Pradesh	19,95,81,477	Lakshadweep	64,429
Maharashtra	11,23,72,972	Daman & Diu	2,42,911
Bihar	10,38,04,637	Dadra & Nagar Haveli	3,42,853
West Bengal	9,13,47,736	Andaman & Nicobar Islands	3,79,944
Andhra Pradesh	8,46,65,533	Sikkim	6,07,688



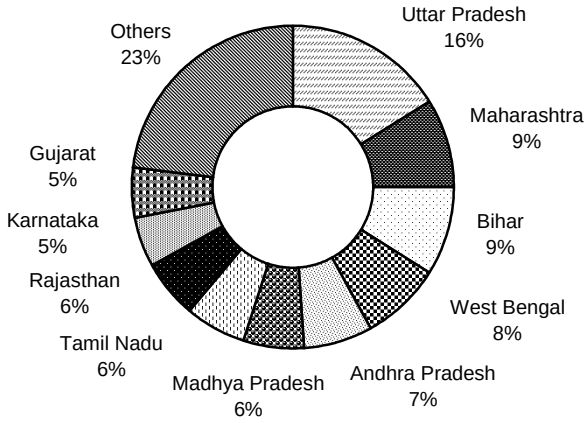
Highlights

- 2001-2011 is the first decade (with the exception of 1911-1921) which has actually added lesser population compared to the previous decade.
- The percentage decadal growth during 2001-2011 has registered the sharpest decline since Independence - a decrease of 3.90 percentage points from 21.54 to 17.64 per cent.
- During 2001-2011, as many as 25 states / UTs with a share of about 85% of the country's population registered an annual growth rate of **less than 2%** as compared to 15 states / UTs with a share of about 42% during the period 1991-2001.
- 15 states / UTs have grown by **less than 1.5** per cent per annum during 2001-2011, while the number of such states / UTs was only 4 during the previous decade.

INDIA compared to nine other most populous countries in the world



Share of different states in India's population



Gender Composition of Population 2011				
	2001		2011 (Provisional)	
	Population (in mn)	Proportion (in %)	Population (in mn)	Proportion (in %)
Males	532.2	51.74	623.7	51.54
Females	496.5	48.26	586.4	48.46
Sex Ratio	933		940	

Overall Sex ratio at the National level has increased by 7 points since Census 2001 to reach 940 at Census 2011. This is the highest Sex Ratio recorded since Census 1971 and a shade lower than 1961.

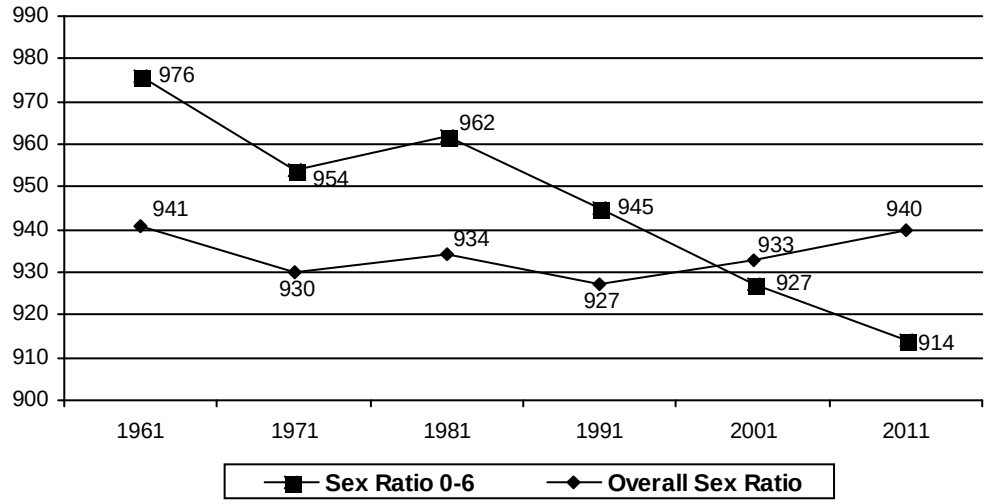
States / UTs ranked as per Sex Ratio* 2011			
Top 2 States / UTs		**Bottom 2 States / UTs**	
States / UTs	**Sex Ratio**	**States / UTs**	**Sex Ratio**
Kerala	1,084	Daman & Diu	618
Puducherry	1,038	Dadra & Nagar Haveli	775

* Sex Ratio is defined as the number of females per 1000 males
Increase in Sex Ratio is observed in 29 states / UTs. Three major states (J&K, Bihar & Gujarat) have shown decline in Sex Ratio as compared to Census 2001.

Districts ranked as per Sex Ratio 2011			
Top 2 Districts		**Bottom 2 Districts**	
District	**Sex Ratio**	**District**	**Sex Ratio**
Mahe (Puducherry)	1,176	Daman (Daman & Diu)	533
Almora (Uttarakhand)	1,142	Leh (Ladakh) (Jammu & Kashmir)	583

* Sex Ratio is defined as the number of females per 1000 males

SEX RATIO & CHILD SEX RATIO (0-6 YRS) – INDIA: (1961 – 2011)



Whereas overall Sex Ratio has shown improvement since 1991, decline in Child Sex Ratio (0-6) has been unabated since 1961 census.

Population (0-6 years) 2001-2011				
	2001	**2011**	**Difference**	**% Growth**
Persons	16,38,37,395	15,87,89,287	-50,48,108	-3.08
Males	8,50,08,267	8,29,52,135	-20,56,132	-2.42
Females	7,88,29,128	7,58,37,152	-29,91,976	-3.80

Minerals

Metallic Minerals

1. Antimony:
(1) Punjab
(2) Karnataka

2. Bauxite:
(1) Bihar
(2) Madhya Pradesh
(3) Gujarat

3. Chromite:
(1) Odisha
(2) Maharashtra

4. Coal:
(1) Jharkhand
(2) West Bengal

5. Copper:
(1) Jharkhand
(2) Rajasthan
(3) Madhya Pradesh

6. Diaspore:
(1) Uttar Pradesh
(2) Madhya Pradesh

7. Gold:
(1) Karnataka
(2) Andhra Pradesh

8. Iron:
(1) Goa
(2) Madhya Pradesh
(3) Jharkhand

9. Lead:
(1) Rajasthan
(2) Andhra Pradesh

10. Lignite:
(1) Tamil Nadu
(2) Gujarat

11. Manganese:
(1) Odisha
(2) Madhya Pradesh
(3) Karnataka

12. Nickel:
(1) Odisha

13. Natural Gas:
(1) Assam
(2) Gujarat
(3) Maharashtra

14. Petroleum:
(1) Assam
(2) Gujarat

15. Silver:
(1) Rajasthan
(2) Bihar
(3) Karnataka

16. Tin:
(1) Bihar

17. Tungsten:
(1) Rajasthan
(2) West Bengal

18. Uranium:
(1) Kerala
(2) Bihar
(3) Rajasthan

19. Zinc:
(1) Rajasthan

Non-Metallic Minerals

1. Asbestos:
(1) Andhra Pradesh
(2) Bihar

2. Ball clay:
(1) Andhra Pradesh
(2) Rajasthan

3. Barytes:
(1) Andhra Pradesh
(2) Maharashtra

4. Calcite:
(1) Rajasthan
(2) Gujarat

5. China clay (Kaolin):
(1) Rajasthan
(2) West Bengal

6. Conundrum:
(1) Karnataka
(2) Maharashtra

7. Diamond:
(1) Madhya Pradesh
(2) Andhra Pradesh

8. Dolomite:
(1) Madhya Pradesh
(2) Odisha

9. Feldspar:
(1) Rajasthan
(2) Tamil Nadu

10. Fire clay:
(1) Bihar
(2) Gujarat

11. Fluorite:
(1) Gujarat
(2) Rajasthan

12. Graphite:
(1) Odisha
(2) Rajasthan

13. Gypsum:
(1) Rajasthan
(2) Andhra Pradesh

14. Kyanite:
(1) Bihar
(2) Maharashtra

15. Limestone:
(1) Madhya Pradesh
(2) Tamil Nadu

16. Magnetite:
(1) Tamil Nadu
(2) Uttar Pradesh

17. Marble:
(1) Rajasthan

18. Mica:
(1) Jharkhand
(2) Rajasthan
(3) Andhra Pradesh

19. Ochre:
(1) Rajasthan
(2) Madhya Pradesh

20. Pyrites:
(1) Bihar

21. Sulphur:
(1) Tamil Nadu

22. Quartz:
(1) Andhra Pradesh
(2) Karnataka

23. Quartzite:
(1) Odisha
(2) Bihar

24. Silica sand:
(1) Uttar Pradesh
(2) Gujarat

25. Sillimanite:
(1) Maharashtra
(2) Meghalaya

National Parks and Wildlife Sanctuaries in India

Name	*Location*
Achanakmar Wild life Sanctuary	Chhattisgarh
Bandhavgarh National Park	Madhya Pradesh
Bandipur National Park	Karnataka
Bannarghatta National Park	Karnataka
Bhadra Wild life Sanctuary	Karnataka
Bhimbandh Wild life Sanctuary	Bihar

Name	*Location*
Bori Wildlife Sanctuary	Madhya Pradesh
Sanjay-Gandhi National Park	Maharastra
Chandra-prabha Wildlife Sanctuary	Uttar Pradesh
Jim Corbett National Park	Uttarakhand
Dachigam National Sanctuary	Jammu and Kashmir
Dandeli Sanctuary	Karnataka
Dudwa National Park	Uttar Pradesh
Eravikulam National Park	Kerala
GandhiSagar Sanctuary	Madhya Pradesh
Garampani Wildlife Sanctuary	Assam
Keoladeo National Park	Rajasthan
Gir Wildlife Sanctuary	Gujarat
Gautam Buddha Wild life Sanctuary	Bihar
Hazaribagh Wildlife Sanctuary	Jharkhand
Intanki Sanctuary	Nagaland
Jaldapara National Park	West Bengal
Kanha Tiger Reserve	Madhya Pradesh
Kawal Tiger Reserve	Telangana
Kaziranga National Park	Assam
Khangchendzonga National Park	Sikkim
Kinnersani Wildlife Sanctuary	Telangana
Kolleru Bird Sanctuary	Andhra Pradesh
Nelapattu Bird Sanctuary	Andhra Pradesh
Manas Wildlife Sanctuary	Assam
Mudumalai National Park	Tamil Nadu
Mukambika Wildlife Sanctuary	Karnataka
Namdapha National Park	Arunachal Pradesh
Navegoan National Park	Maharashtra
Panchmarhi Biosphere Reserve	Madhya Pradesh
Periyar National Park	Kerala
Ranthambore National Park	Rajasthan
Rohla National Park	Himachal Pradesh
Sariska Tiger Reserve	Rajasthan
Sharavathy Wildlife Sanctuary	Karnataka
Shikari Devi Wildlife Sanctuary	Himachal Pradesh
Similipal National Park	Odisha
Sunderbans National Park	West Bengal
Tadoba Andhari Tiger Reserve	Maharashtra
Eturnagaram Wildlife Sanctuary	Telangana
Tansa Wildlife Sanctuary	Maharashtra
Tungabhadra Sanctuary	Karnataka
Velavadar Blackbuck National Park	Gujarat
Wayanad Wildlife Sanctuary	Kerala

CHAPTER – IV

POLITY

Presidents of India

Name	*Term of Office*
Dr. Rajendra Prasad	1950-1962
Dr. Sarvepalli Radhakrishnan	1962-1967
Dr. Zakir Husain	1967-1969
Varahagiri Venkata Giri	May-July 1969 (Acting)
Justice Mohammed Hidayatullah	July-August 1969 (Acting)
V. V. Giri	1969-1974
Fakhruddin Ali Ahmed	1974-1977
B. D. Jatti	February-July 1977 (Acting)
Neelam Sanjeev Reddy	1977-1982
Giani Zail Singh	1982-1987
R. Venkataraman	1987-1992
Dr. Shankar Dayal Sharma	1992-1997
K. R. Narayanan	1997-2002
A. P. J. Abdul Kalam	2002-2007
M.S. Pratibha Patil	2007-2012
Pranab Mukherjee	2012-

Vice Presidents of India

Name	*Term of Office*
Dr. S. Radhakrishnan	1952-1962
Dr. Zakir Hussain	1962-1967
V. V. Giri	1967-1969
Gopal Swarup Pathak	1969-1974
B. D. Jatti	1974-1979
Mohammed Hidayatullah	1979-1984
R. Venkataraman	1984-1987
Dr. Shankar Dayal Sharma	1987-1992
K. R. Narayanan	1992-1997
Krishan Kant	1997-2002
Bhairon Singh Shekawat	2002-2007
Mohammad Hamid Ansari	2007-

Prime Ministers of India

Name	*Term of Office*
Jawaharlal Nehru	August 15,1947-May 27,1964
Guljari Lal Nanda	May 27,1964-June 9,1964
Lal Bahadur Shastri	June 9,1964-January 11,1966
Guljari Lal Nanda	January 11,1966-January 24,1966
Indira Gandhi	January 24,1966-March 24,1977
Morarji Desai	March 24,1977-July 28,1979
Charan Singh	July 28,1979-January 14,1980
Indira Gandhi	January 14,1980-October 31,1984
Rajiv Gandhi	October 31,1984-December 1,1989
V. P. Singh	December 2,1989-November 10,1990
Chandrashekhar	November 10,1990-June 21,1991
P. V. Narasimha Rao	June 21,1991-May 16,1996
A. B. Vajpayee	May 16,1996-June 1,1996
H. D. Deve Gowda	June 1,1996-April 21,1997
I. K. Gujral	April 21,1997-March 19,1998
A. B. Vajpayee	March 19,1998-Octerber 12, 1999
A. B. Vajpayee	October 13,1999-May 21, 2004
Manmohan Singh	May 22, 2004-May 26, 2014
Narendra Modi	May 26, 2004

CHAPTER – V

SCIENCE & TECHNOLOGY

Inventions and Discoveries

Invention	*Year*	*Inventor*	*Country*
Aeroplane	1903	Orville and Wilbur Wright	U.S.A.
Bakelite	1907	L. H. Baekeland	Belgium
Ball-Point Pen (improved form)	1938	L. and G. Biro	Hungary
Barometer	1644	E. Torricelli	Italy
Bicycle	1839	K. Macmillan	Britain
Bicycle tyre (air)	1888	J. B. Dunlop	Britain
Calculating Machine	1642	Blaise Pascal	France
Celluloid	1861	Alexander Parkes	Britain
Centigrade Scale (Celsius)	1742	Anders Celsius	France
Chloroform	1831	E. Souberran	France
Cinema	1895	Nicolas & Jean Lumiere	France
Blood Circulation	1628	William Harvey	Britain
Clock (mechanical)	1725	I-Hsing and Liang Ling-Tsan	China
Clock (pendulum)	1656	Christian Huygens	The Netherlands
Diesel Engine	1895	Rudolf Diesel	Germany
Dynamite	1867	Alfred Nobel	Sweden
Dynamo (principle)	1831	Michael Faraday	Britain
Electric Iron	1882	H. W. Seely	U.S.A.
Electric Lamp	1879	Thomas Alva Edison	U.S.A.
Electric Motor (AC)	1888	Nikola Tesla	U.S.A.
Electric Motor (DC)	1873	Zenobe Gramme	Belgium
Film (Musical)	1923	Dr. Lee de Forest	U.S.A.
Fountain Pen	1884	L. E. Waterman	U.S.A.
Glider	1853	Sir George Cayley	Britain
Gramophone	1878	Thomas Alva Edison	U.S.A.
Insulin	1921	Sir Frederick Banting & Best	Canada
Jet Engine	1937	Sir Frank Whittle	Britain
Lift	1852	E. G. Otis	U.S.A.
Lightning Conductor	1752	Benjamin Franklin	U.S.A.
Locomotive (steam)	1804	Richard Trevithic	Britain
Match, safety	1855	J. E. Lundstrom	Sweden
Microphone	1876	Thomas Alva Edison	U.S.A.
Microscope	1590	Z. Janssen	The Netherlands
Motor car (petrol)	1885	Karl Benz	Germany
Motorcycle	1848	Edward Butler	Britain
Motor Scooter	1919	G. Bradshaw	Britain
Nylon	1937	Dr. W. H. Carothers	U.S.A.
Parachute	1797	A. J. Garnerin	France
Penicillin	1928	Sir Alexander Fleming	Britain
Photography (paper)	1835	W. H. Fox Talbot	Britain
Photography (film)	1888	John Carbutt	U.S.A.
Piano	1711	Cristofori	Italy
Printing Press	1455	Johann Gutenberg	Germany
Radar	1922	A. H. Taylor and L. C. Young	U.S.A.
Radium	1898	Marie and Pierre Curie	France
Radio Telegraphy	1901	Guglielmo Marconi	Italy
Rayon	1883	Sir Joseph Swann	Britain
Razor (safety)	1895	K. G. Gillette	U.S.A.
Razor (electric)	1931	Col. Jacob Schick	U.S.A.

Refrigerator	1851	James Harrison, Alexander Catlin	U.S.A.
Revolver	1835	Samuel Colt	U.S.A.
Rubber (vulcanised)	1841	Charles Goodyear	U.S.A.
Rubber (waterproof)	1819	Charles Macintosh	Britain
Safety Lamp	1816	Sir Humphry Davy	Britain
Safety Pin	1849	William Hunt	U.S.A.
Sewing Machine (improved)	1851	Issac M. Singer	U.S.A.
Ship, Steam	1775	J. C. Perier	France
Ship, Turbine	1894	Sir Charles Parsons	Britain
Shorthand (modern)	1837	Issac Pitman	Britain
Steam Engine	1698	Thomas Savery	Britain
Steam Engine (piston)	1712	Thomas Newcomen	Britain
Steam Engine (condenser)	1765	James Watt	Britain
Steel (stainless)	1913	Harry Brearley	Britain
Submarine	1776	David Bushnell	U.S.A.
Tank	1914	Sir Ernest Swinton	Britain
Telegraph code	1837	Samuel F. B. Morse	U.S.A.
Telephone	1861	J. P. Reis	Germany
Telephone (practical)	1876	Alexander Graham Bell	U.S.A.
Telescope	1608	Hans Lippershey	The Netherlands
Television	1926	John Logie Baird	Britain
Thermometer	1593	Galileo Galilei	Italy
Tractor	1892	John Froelich	U.S.A.
Transistor	1948	John Bardeen, William Shockley and Walter Brattain	U.S.A.
Typewriter	1864	Mitterhofer	Austria
Typewriter (improved)	1868	Christopher Sholes	U.S.A.
Watch (Self-winding)	1791	A. L. Breguet	France
X-ray	1895	Wilhelm Roentgen	Germany
Zip fastener	1891	W. L. Judson	U.S.A.

Communicable Diseases

Name	*Cause*	*Transmission*	*Incubation Period*
AIDS (Acquired Immune Deficiency Syndrome)	Human Immuno-deficiency virus (HIV)	Sexual relations; sharing of syringes; blood transfusion	Several years
Brucellosis	Brucellus abortus or B meliteusis bacteria	Cattle or goats	3-6 years
Chickenpox (Varicella)	Varicella zoster virus (US) Herpes zoster virus (UK)	Infected persons; articles contaminated by discharge from mucous membranes	10-21 days
Cholera	Vibrio cholerae bacterium	Contaminated water and seafood	a few hours-5 days
Common cold	Numerous viruses	Respiratory droplets of infected person	1-4 days
Diphtheria	Cornybacterium diphtheriae	Respitary secretions and saliva of infected persons or carriers	2-6 days
Encephalitis	Viruses	Bite from infected mosquito	4-21 days
Gas gangrene	Clostridium Welchii bacterium	Soil or soil-contaminated articles	1-4 days
Gonorrhoea	Neisseria gonnorr-hoeoe bacterium	Urethral or vaginal secretions of infected persons	3-8 days
Hepatitis A	Hepatitis A virus	Contaminated food and water	15-50 days

(infectious)			
Hepatitis B (Serum type B)	Hepatitis B virus	Infected blood; parenteral injection	6 weeks-6 months
Influenza	Numerous viruses (types A, B, C,)	Direct contact; respiratory droplets, possibly airborne	1-4 days
Leprosy	Mycobacterium leprae bacillus	Droplet infection (minimally contagious)	variable
Malaria	Plasmodium protozoa	Bite from infected mosquito	6-37 days
Measles (rubeola)	Rubeola virus	Droplet infection	10-15 days
Meningitis	Various bacteria (bacterial meningitis) and viruses (Viral meningitis)	Respiratory droplets	varies with causative
Mumps	Virus	Direct contact with infected persons; respiratory droplets and oral secretions	14-21 days
Paratyphoid fevers	Salmonella bacteria	Ingestion of contaminated food and water	1-14 days
Pneumonia	Streptococcus Pneumoniae bacterium	Droplet infection	1-3 weeks
Poliomyelitis	Polio viruses	Direct contact with nasopharyngeal secretions of infected persons; vomit	7-21 days
Rabies	Virus	Bite from rabid animal	10 days-6 months
Rubella (German measles)	Rubella virus	Direct contact or droplet spread of nasopharyngeal secretion	14-21 days
Scarlet fever	Group A molytic Streptococcus bacteria	Direct or indirect contact with infected persons, or droplet infection	1-5 days
Smallpox (Variola)	Poxvirus variola	Direct contact; droplet	7-14 days
Syphilis	Treponema pallidium bacteria	Sexual relations; contact with open lesions; blood transfusion	10-90 days
Tetanus (lockjaw)	Clostridium tetani bacillus	Animal faeces and soil	3-21 days
Tuberculosis	Mycobacterium tuberculosis bacillus	Droplet spread; ingestion from variable contaminated milk	2-10 weeks
Typhoid fever	Salmonella typhi bacillus	Contaminated food and water	7-24 days
Whopping Cough (pertussis)	Bordetella pertussis bacterium	Droplet spread	10-21 days
Yellow fever	Arbovirus	Bite from infected mosquito	3-6 days

From The Sciences

Lowest Melting Point
Since Mercury melts at –38.8 ℃ (–38 ℉), it is liq uid at room temperature. Mercury is used in thermometers because it expands as it is heated.

Highest Melting Point
The temperature must be 3,652 ℃ (6,606 ℉) before Carbon will melt, two-thirds as hot as the Sun's surface.

Rarest Elements
Astatine is the rarest element on Earth; rhodium is the scarcest metal in the world-just 3 tonne is mined every year.

Heaviest Metal
A 33-cm^3(13-in^3) cube of Osmium weighs 640 kg – equivalent to ten people each weighing 64 kg, or a small car.

Acid and Alkalis
The acid or alkali (or base) content of a substance is measured in P^H (potential Hydrogen) on a scale of 0-14. Acids dissolve in water to form sharp-tasting solutions, like lemon juice. Alkalis dissolve in water to form soapy solutions.

Substance	pH
Hydrochloric acid	0
Car battery acid	1.0
Lemon juice	2.4
Apple	3.0
Vinegar	4.0
Rainwater	5.6
Milk	6.6
Pure water (Neutral)	7.0
Human blood	7.4
Sea water	7.8
Baking soda	8.5

Ammonia	12.0
Caustic soda (Alkali)	14.0

The Sciences

Acoustics: The study of sound (or the science of sound).

Aerodynamics:

(I) The branch of mechanics that deals with the motion of air and other gases.

(II) The study of the motion and control of solid bodies like aircraft, missiles, etc., in air.

Aeronautics: The science or art of flight.

Agronomy: The science of soil management and the production of field crops.

Agrostolgy: The study of grasses.

Anatomy: The science dealing with the structure of animals, plants or human body.

Anthropology: The science that deals with the origins, physical and cultural development of mankind.

Archaeology: The study of antiquities.

Astrology: The ancient art of predicting the course of human destinies with the help of indications deduced from the position and movement of the heavenly bodies.

Astronautics: The science of space travel.

Astronomy: The study of heavenly bodies.

Astrophysics: The branch of astronomy concerned with the physical nature of heavenly bodies.

Bacteriology: The study of bacteria.

Biochemistry: The study of chemical processes of living things.

Biology: The study of living beings.

Biometry: The application of mathematics to the study of living things.

Bionics: The study of functions, characteristics and phenomena observed in the living world and application of this knowledge to the world of machines.

Bionomics: The study of the relation of an organism to its environment.

Botany: The study of plants.

Ceramics: The art and technology of making objects from clay, etc.

Chemistry: The study of elements and their laws of combination and behaviour.

Chemotherapy: The treatment of disease by using chemical substances.

Chronobiology: The study of the duration of life.

Conchology: The branch of zoology dealing with the shells of molluscs.

Cosmogony: The science of origin or generation of the universe.

Cosmology: The study of universe as a whole and of its form, nature, etc.

Cryptography: The study of ciphers (secret or coded writings).

Crystallography: The study of the structure, forms and properties of crystals.

Cryogenics: The science dealing with the production, control, and application of very low temperatures.

Cytology: The study of cells, especially their formation, structure, and functions.

Dactylography: The study of fingerprints for the purpose of identification.

Ecology: The study of the relation of animals and plants to their surroundings, animate and inanimate.

Econometrics: The application of mathematics in testing economic theories.

Economics: The science dealing with the production, distribution and consumption of goods and services.

Embryology: The study of development of embryos.

Entomology: The study of insects.

Epidemiology: The branch of medicine dealing with epidemic diseases.

Epigraphy: The study of inscriptions.

Ethnology: A branch of anthropology that deals with the origin, distribution, and distinguishing characteristics of the races of mankind.

Ethology: The study of animal behaviour.

Eugenics: The study of the production of better offspring by the careful selection of parents.

Genealogy: The study of family origins and history. It includes the compilation of lists of ancestors and arranging them in pedigree charts.

Genesiology: The science of generation.

Genetics: The branch of biology dealing with the phenomena of heredity and the laws of governing it.

Geography: The development of science of the earth's surface, physical features, climate, population, etc.

Geology: The science that deals with the physical history of the earth.

Geomorphology: The study of the characteristics, origin, and development of landforms.

Gerontology: The study of old age, its phenomena, diseases, etc.

Histology: The study of tissues.

Horticulture: The cultivation of flowers, fruits, vegetables, and ornamental plants.

Hydrology: The study of water with reference to its occurrence, and properties in the hydrosphere and atmosphere.

Metallurgy: The process of extracting metals from their ores.

Meteorology: The science of the atmosphere and its phenomena.

Metrology: The scientific study of weights and measures.
Microbiology: The study of minute living organisms, including bacteria, moulds, and pathogenic protozoa.

Mycology: The study of fungi.

Neurology: The study of the nervous system, its functions and disorders.

Numerology: The study of numbers. The study of the date and year of one's birth and to determine its influence on one's future life.

Odontology: The scientific study of the teeth.

Optics: The study of nature and properties of light.

Ornithology: The study of birds.

Osteology: The study of bones.

Paleobotany: The study of fossil plants.

Palaeontology: The study of fossils.

Pathology: The study of diseases.

Petrology: Study of rocks.

Phonetics: The study of speech sounds and the production, transmission, reception, etc.

Phrenology: The study of the faculties and qualities of minds from the shape of the skull.

Phthisiology: The scientific study of tuberculosis.

Phycology: The study of algae.

Physics: The study of the properties of matter.

Physiology: The study of the functioning of the various organs of living beings.

Pomology: The science that deals with fruits and fruit growing.

Psychology: The study of human and animal behaviour.

Radiology: The study of X-rays and radioactivity.

Rheology: The study of the deformation and flow of matter.

Seismology: The study of earthquakes and the phenomena associated with it.

Selenology: The scientific study of 'Moon', its nature, origin, movement, etc.

Sericulture: The raising of silkworms for the production of raw silk.

Sociology: The study of human society.

Teleology: The study of the evidences of design or purpose in nature.

Telepathy: Communication between minds by some means other than sensory perception.

Therapeutics: The art and science of healing.

Topography: A special description of a part or region.

Toxicology: The study of poisons.

Virology: The study of viruses.

Zoology: The study of animal life.

Temperature Scales

Currently, three systems of temperature measurement are in use – the Celsius Scale, the Fahrenheit Scale, and the Kelvin Scale. The Celsius Scale was worked out by the Swedish physicist and astronomer Anders Celsius in 1742. It appears to have been revised by another Swedish physicist J. P. Christen. This scale was originally known as the Centigrade scale. It was renamed Celsius Scale in honour of its inventor Celsius.

The Fahrenheit Scale was devised by the German–born physicist Gabriel Daniel Fahrenheit (1686-1736) around 1715.

The Kelvin Scale was pioneered by the British physicist William Thompson Kelvin (1824-1907), later Lord Kelvin.

The International System of units (SI) recognises the Celsius and Kelvin Scales. The Kelvin Scale is derived from thermodynamics and is of special importance to scientists. The Scale generally used by all is the Celsius.

Absolute Zero is a thermodynamic concept, that is to say, it is based on heat energy. It is the point at which molecules have no heat energy. At this point all motion stops. Even atomic particles slow down.

Conversion Formula

Celsius to Kelvin: $K = C + 273.16$
Fahrenheit to Celsius: $C = (F–32) \times 0.555$
Celsius to Fahrenheit: $F = C \times 1.8 + 32$

Common benchmarks for comparison of temperature scales are

	F	C	K
Absolute zero	–459.7	–273.15	0
Freezing point of water	32	0	273.15
Normal human body temperature	98.6	37	310.15
Boiling point of water	212	100	373.15

Scientific measures

Ampere: Unit of electric current. It is approximately equal to the flow of 6×10^{18} electrons per second.

Atomic Weight: The weight of an atom of hydrogen is taken as the standard; the respective weights of the atoms of all other substances are expressed in terms of it. So when it is stated that the atomic weight of iron is 56, it is meant that the atom of iron is 56 times as heavy as the atom of hydrogen.

Angstrom: The unit of wavelength of light is Angstrom. 1 Angstrom = 10^{-8} cm.

Bar: Bar is the unit of atmospheric pressure. One bar is equal to a pressure of 10^6 dynes per sq.cm.

Calorie: Calorie is the unit of heat. It is the amount of heat required to raise the temperature of one gram of water through 1 ℃.

Horse Power: The practical unit of power - the power of an agent which can work at the rate of 550 foot-pounds per second or 33,000 foot-pounds per minute.
1HP = 746 Watts.

Joule: Joule is the unit of work or energy. It is equal to 10^7 ergs. It is the energy consumed in one second in an electrical circuit through which a current energy of one ampere is flowing against a potential difference of one volt.

Knot: Knot is a measure to know the speed of a ship.

Light Year: A light year is the distance light travels in one mean solar year, at a speed of 1,86,000 miles per second. It is equal to 5,880,000,000,000 miles. It is used as an unit for measuring stellar distances.

Nautical Mile: A unit of distance used in navigation – one minute of longitude measured along the Equator. A Nautical Mile is approximately equal to 6,080 feet.

Pressure: The pressure is expressed in pounds weight per sq.cm. The pressure of the atmosphere is expressed in millibars. One Millibar = 1 dyne per sq.cm. If the pressures are very high, they are expressed in multiples of atmospheric pressure. One atmosphere is a pressure exerted by a column of mercury 76 cm high at sea level and at a latitude of 45°.

Quintal: Quintal is a metric measure of weight. 100 kilograms is equal to 1 quintal.

Volt: It is the unit of potential difference. It is the potential difference produced in an electrical conductor of resistance one ohm, when the amount of energy consumed in the circuit in one second is one joule.

Watt: Unit of power- the rate of work done in joules per second; the energy expended per second by an unvarying electric current of 1 ampere.

Scientific Instruments and Appliances

Altimeter: Altimeter is a special type of aneroid barometer, used in measuring altitudes.

Ammeter: Ammeter is an instrument to measure the strength of an electric current.

Anemometer: Anemometer is an instrument to measure the velocity and find the direction of wind.

Audiometer: Audiometer is an instrument to measure difference in hearing.

Barometer: Barometer is used for measuring atmospheric pressure.

Calorimeter: Calorimeter is an instrument for measuring quantities of heat.

Chronometer: Chronometer is a clock to determine longitude of a vessel at sea.

Clinical Thermometer: A thermometer for measuring the temperature of human body.

Colorimeter: An instrument for comparing intensities of colour.

Commutator: An instrument to change or reverse the direction of an electric current. In a dynamo, it is used to convert the alternating current into direct current.

Computer: A technical device designed to find instantaneous solutions of huge and complex calculations based on the information already fed.

Crescograph: An instrument for measuring the growth of plants. This was invented by an Indian, scientist J. C. Bose, a renowned botanist.

Cyclotron: An apparatus for electromagnetic acceleration of charged atoms. It has made possible to make ordinary elements radioactive, leading to production of radioactive isotopes.

Dictaphone: A machine, which first records what is spoken into it and then reproduces it in type.

Dynamo: A device for converting mechanical energy into electrical energy.

Dynamometer: An instrument for measuring the electrical power.

Electrocardiograph (ECG): An instrument used for detection of electric impulses of the heart. It gives a graphic picture of heartbeats.

Electroencephalograph (EEG): An instrument used for recording of change in electric potential in various areas of the brain by means of electrodes on the scalp or in the brain itself.

Electrometer: An instrument for measuring electricity.

Electroscope: An instrument for detecting the presence of electric charge.

Galvanometer: An instrument for measuring electric current.

Hydrometer: An instrument for measuring the relative density of liquids.

Hydroscope: An optical instrument used for seeing objects below the surface of water.

Hygrometer: An instrument for measuring the relative humidity of the atmosphere.

Hygroscope: An instrument to show the changes in atmospheric humidity.

Hypsometer: An instrument to measure the height above sea level. It is an apparatus for detecting the boiling point of liquid. Since the boiling points of liquids have a direct relationship with atmospheric pressure and atmospheric pressure with altitude, therefore, the instrument may be used for the determination of altitude above sea level. This instrument is generally used by mountaineers.

Lactometer: An instrument for measuring the relative density of milk.

Manometer: An instrument to measure the pressure of gases.

Mariners's Compass: An apparatus for determining direction, graduated to indicate 33 directions. The "N" point on the dial indicates North Pole and the "S" point, South Pole.

Magnetometer: An instrument used to compare the magnetic moments and fields.

Megaphone: An instrument for carrying sound to long distances.

Microphone: An instrument used for converting sound waves into electrical energy which is transmitted through wires and then recovered into sound in a magnified intensity.

Microscope: An instrument for magnified view of very small objects.

Periscope: An apparatus for viewing objects lying above the eye level of the observer and whose direct vision is obstructed. It consists of a tube bent twice at right angles and having plane mirrors at these bends inclined at angles of 45°to the tube.

Photometer: An instrument for comparing the luminous intensity of the sources of light.

Pyknometer: An instrument used to measure the density and co-efficient of expansion of liquid.

Pyrheliometer: An instrument for measuring solar radiations.

Pyrometer: A thermometer to measure high temperature.

Radar: An instrument used for detecting and finding the range of moving objects by transmitting beams of radio waves.

Radio Micrometer: An instrument for measuring heat radiations.

Rain Gauge: An instrument for measuring rainfall.

Refractometer: An instrument used to measure the refractive index of a substance.

Resistance Thermometer: An instrument used for determining the electrical resistance of conductor.

Salinometer: A type of hydrometer used to determine the concentration of salt solutions by measuring their densities.

Seismograph: An instrument used for recording the intensity and origin of earthquakes shocks.

Sextant: An instrument used for measurement of angular distances between two objects.

Sphygmomanometer: An apparatus for measuring blood pressure.

Stereoscope: An optical device to see two dimensional pictures as having depth and solidity.

Stethoscope: A medical instrument for hearing and analysing the sound of heart and lungs.

Tape Recorder: An apparatus which records and reproduces sound by using magnetic tapes.

Telephone: An apparatus used for transmission of sound.

Teleprinter: A communication medium for automatic sending, receiving and printing of telegraphic messages from distant places.

Telescope: An instrument for viewing distant objects as magnified.

Television: An instrument used for transmitting the visible moving images by means of wireless waves.

Thermometer: An instrument used for measuring the temperature of a body.

Thermostat: An automatic device for regulating constant temperatures.

Transistor: A small device which may be used to amplify current and perform other functions usually performed by a thermionic valve.

Viscometer: An instrument for measuring the viscosity i.e. the property of resistance of a fluid to relative motion within itself.

Voltmeter: An instrument to measure potential difference between two points.

National Laboratories and Research Institutes

Physical and Earth Sciences

Central Electronic Engineering Research Institute, Pilani
Central Scientific Instruments Organisation, Chandigarh
National Geo-Physical Research Institute, Hyderabad
National Institute of Oceanography, Panaji (Goa)
National Physical Laboratory, New Delhi

Chemical Sciences

Central Electro-Chemical Research Institute, Karaikudi
Central Fuel Research Institute, Dhanbad
Central Salt and Marine Chemicals Research Institute, Bhavnagar
Indian Institute of Petroleum, Dehra Dun
National Chemical Laboratory, Pune

Biological Sciences

Central Drug Research Institute, Lucknow
Chemical Food Technological Research Institute, Mysore
Central Institute of Medicinal and Aromatic Plants, Lucknow
Central Leather Research Institute, Chennai
Central Public Health Engineering Research Institute, Nagpur
Centre for Cellular and Molecular Biology, Hyderabad
Indian Institute of Chemical Biology, Kolkata
Industrial Toxicology Research Centre, Lucknow
Institute of Plasma Research, BHAT, Gandhinagar
National Botanical Research Institute, Lucknow
Indian Institute of Chemical Technology, Hyderabad

Engineering

Central Building Research Institute, Roorkee
Central Glass and Ceramic Research Institute, Jadhavpur (Kolkata)
Central Mechanical Engineering Research Institute, Durgapur
Central Mining Research Station, Dhanbad
Central Road Research Institute, New Delhi
Electrical Research and Development Association, Vadodara
Indian Institute of Advanced Study, Shimla

National Aeronautical Laboratory, Bangalore
National Dairy Research Institute, Karnal
National Environmental Engineering Research Institute, Nagpur
National Metallurgical Laboratory, Jamshedpur
Structural Engineering Research Centre, Roorkee and Chennai

Scientific Museums

Birla Industrial Technological Museum, Kolkata
Indian National Scientific Documentation Centre, New Delhi
Visvesvaraya Industrial and Technological Museum, Bangalore

Cooperative Research

Ahmedabad Textile Industry's Research Association, Ahmedabad
Automotive Research Association of India, Mumbai
Mumbai Textile Research Association, Mumbai
Cement Research Institute of India, Ballabhgarh
Indian Jute Industries' Research Association, Kolkata
Indian Plywood Industries' Research Institute, Bangalore
Silk and Art Silk Mills Research Institute, Mumbai
South India Textile Research Association, Coimbatore
Tocklai Experimental Station, Jorhat
Wool Research Association, Mumbai

Medical Research

All-India Institute of Medical Sciences, New Delhi
All-India Institute of Speech and Hearing, Mysore
Cholera Research Centre, Kolkata
Indian Council of Medical Research, New Delhi
Institute of Research in Reproduction, Mumbai
National Institute of Cholera and Enteric Diseases, Kolkata
National Institute of Occupational Health, Ahmedabad
National Institute of Nutrition, Hyderabad
National Institute of Virology, Pune
Post-Graduate Institute of Medical Education and Research, Chandigarh
Tuberculosis Research Centre, Chennai

Study of Diseases and Treatment

All-India Institute of Hygiene and Public Health, Kolkata
Cancer Institute, Chennai
Central Drugs Laboratory, Kolkata
Central Leprosy Teaching and Research Institute, Chinglepet
Chittaranjan Cancer Research Centre, Kolkata
Indian Cancer Research Centre, Mumbai
National Institute of Communicable Diseases, Delhi
National Tuberculosis Institute, Bangalore
School of Tropical Medicine, Kolkata
Vallabhbhai Patel Chest Institute, Delhi

Microbiology and Related Studies

Central Research Institute, Kasauli
Haffkine Institute, Mumbai
King Institute of Preventive Medicine, Guindy (Chennai)
Pasteur Institute, Coonoor

Departmental Research Centres

Anthropological Survey of India, Kolkata
Central Water Power Research Station, Khadakvasala (Pune)
Central Power Research Institute, Bangalore and Bhopal
Forest Research Institute, Dehra Dun
Geological Survey of India, Kolkata
Indian Institute of Tropical Meteorology, Pune
Indian Institute of Astrophysics, Kodaikanal
Indian Institute of Geomagnetism, Mumbai
Indian Roads Congress, New Delhi
Telecommunication Research Centre, New Delhi
Research, Designs and Standards Organisation, Lucknow (Railways)

Nuclear and Space Research Centres

Nuclear Research

Atomic Energy Commission, Mumbai
Bhabha Atomic Research Centre, Trombay (Mumbai)
Electronic Corporation of India, Hyderabad
High Altitude Research Laboratory, Gulmarg (Kashmir)
Indian Rare Earths Ltd., Alwaye
Radio Astronomy Centre, Oottacamund
Saha Institute of Fundamental Research, Mumbai
Tata Memorial Centre, Mumbai
Uranium Corporation of India, Jaduguda (Bihar)

Space Research

ISRO Satellite Centre, Bangalore
Indian Space Research Organisation, Bangalore
Physical Research Laboratory, Ahmedabad
Propelling Fuel Complex, Thiruvananthapuram
Satish Dhawan Space Centre, SHAR, Sriharikota
Satellite Launch Vehicle Project, Thiruvananthapuram
Space Commission, Bangalore
Sriharikota Range, Sriharikota, Andhra Pradesh
Thumba Equatorial Rocket Launching Station, Thumba
Vikram Sarabhai Space Centre, Thiruvananthapuram

National Survey and Other Institutes

Botanical Survey of India, Kolkata
Birbal Sahni Institute of Palaeobotany, Lucknow
Bose Research Institute, Kolkata
Indian Association for the Cultivation of Science, Kolkata
National Atlas Organisation, Kolkata
Indian National Science Academy, New Delhi
Indian National Science Congress Association, Kolkata
Raman Research Institute, Bangalore
Survey of India, Dehra Dun
Wadia Institute of Himalayan Zoology, Delhi
Zoological Survey of India, Kolkata

Sports Institutes

Netaji Subhash National Institute of Sports, Patiala
Lakshmibai National College of Physical Education, Gwalior

CHAPTER – VI

SPORTS

Sports and the terms associated with them

Badminton: Angled drive, serve, bird, deuce, double drop, fault, let, lob, love all, smash.

Basketball: Ball, basket, blocking, dribbling, free throw, held ball, holding, jump ball, multiple throws, pivot.

Baseball: Base, bunting, battery, diamond, hitter, home, pitcher, pullout, strike.

Billiards: Baulk line, break, bolting, cannon, cue, hazard, in-off, jigger, long jenney, pot, scratch, screw back, short jenney, spot stroke.

Boxing: Auxilliary point system, babit punch, defence, hook, jab, knock out, slam.

Bridge: Auction, chicane, declarer, dummy, grand slam, no trumps, revoke, ruff, suit.

Chess: Bishop, capture, castling, checkmate, en passant, gambit, king, knight, pawn, queen, rook, stalemate.

Cricket: Ashes, boundary, bowling, catch, chinaman, crease, duck, follow on, googly, gully, hat-trick, hit wicket, l.b.w., no ball, off break, on drive, pitch, rubber, silly point, square leg, stone walling, yorker, wicket.

Croquet: Hoops, mallet, peg out.

Draughts: Huff.

Football: Blind side, corner kick, dribble, free kick, marking, off side, penalty kick, throw in, tripping.

Golf: Bogey, bunker, caddie, dormy, fairway, foursome, greed holes, links, par, putt, tee, threesome.

Gymnastics: A-bars, ariel, blocks, cone of swing, dish, giants, inlocate, kip, planche, tariff, tumble, wrap.

Hockey: Bully, corner, flick, free-hit, roll in, scoop, short corner, stick, striking circle, tackle, tie-breaker.

Horse-racing: jockey, punter, steeplechase.

Judo: Chui, dan, dojo, gyaku, ippon, randori, yoshi, yuko.

Karate: Dachi, gedan, jion, kakato, shiro, ude, zen-no.

Polo: Bunker, chukker, mallet

Rowing: Bow, bucket, cow, feather, paddle, regatta.

Rugby: Trackle, lines, scrum, touch, try.

Shooting: Bag, bull's eye, marksmanship, muzzle, plug.

Skiing: Tobogganing.

Swimming: Back-stroke, breast-stroke, butterfly-stroke, crawl, free-stroke.

Table Tennis: Antiloop, backspin, chop, loop, penhold, grip, twiddle.

Tennis: Ace, backhand, stroke, deuce, fault, let, love, volley.

Volleyball: Ace, blocking, doubling, heave, holding, spike, service.

Wrestling: Half Nelson, head lock, heave, hold, rebouts, scissor.

Cups and trophies associated with sports and games

Air Racing: Jawaharlal Challenge Trophy, King's Cup, Schneider Cup (Sea planes race in UK).

Archery: Federation Cup.

Athletics: Charminar Trophy, World Cup.

Badminton: Agarwal Cup, Amrit Diwan Cup, Australasia Cup, Chadha Cup, European Cup, Harilela Cup, Ibrahim Rahimotalloh Challenge Cup, Narang Cup, Sophia Kitiakara Cup, Konica Cup, S. R. Ruia Cup, Thomas Cup, Tunku Abdul Rahman Cup, Uber Cup, World Cup, Yonex Cup.

Basketball: Basalat Jha Trophy, B.C.Gupta Trophy, Todd Memorial Trophy, William Jones Cup, Federation Cup.

Boat Rowing: American Cup (Yachtracing), Wellington Trophy (India).

Boxing: Aspy Adjahia Trophy, Federation Cup.

Bridge: Holkar Trophy, Ruia Gold Cup, Singhania Trophy.

Chess: Naidu Trophy, Khaitan Trophy, Limca Trophy, World Cup, Corus Cup, Amber Cup.

Cricket: Anthony D'Mellow Trophy, Ashes, Asia Cup, Benson and Hedges Cup, Bose Trophy, Champions Trophy, Charminar Challenge Cup, C. K. Nayudu Trophy, Cooch-Behar Trophy, Deodhar Trophy, Duleep Trophy, G.D.Birla Trophy, Gillette Cup, Ghulam Ahmed Trophy, Irani Trophy, Jawaharlal Nehru Cup, McDowells Challenge Cup, Merchant Trophy, Moin-ud-Dowla Cup, Natwest Trophy, Prudential Cup, Rani Jhansi Trophy, Ranji Trophy, Reliance Cup, Rohinton Baria Trophy, Rothmas Cup, Sharjah Cup, Sheesh Mahal Trophy, Sheffield Shield, Texaco Cup, Vijay Hazare Trophy, Vijay Merchant Trophy, Vizzy Trophy, World Series Cup.

Football: Bandodkar Trophy, B. C. Roy Trophy, Bordoloi Trophy, Colombo Cup, DCM Cup, Durand Cup, European Cup, FA Cup, Federation Cup, Gold Cup, Governor's Cup, Great Wall Cup, IFA Shield, Jules Rimet Trophy (World Cup), Kings Cup, Lal Bahadur Shastri Trophy, Merdeka Cup, Nations Cup, Nehru Gold Cup, Nizam Gold Cup, Raghubir Singh Memorial Cup, Rovers Cup, Sanjay Gold Cup, Santosh Trophy, Sir Ashutosh Mukerjee Trophy, Stafford Cup, Subroto Cup, Todd Memorial Trophy, UEFA Cup, Vittal Trophy, Airlines Cup, Asia Cup, America Cup, Winner's Cup, Independence Day Cup, Indira Gandhi Trophy, Rajiv Gandhi Trophy.

Golf: Canada Cup, Eisenhower Trophy, Muthiah Gold Cup, Nomura Trophy, Paralamidi Trophy, Prince of Wales Cup, Ryder Cup, Walker Cup, Augusta Masters, U.S. Open, British Open, Sirikit Cup.

Hockey: Agha Khan Cup, Allwyn Asia Cup, Azlan Shah Cup, Beighton Cup, Bombay Gold Cup, Champions Trophy, Clarke Trophy, Dhyan Chand Trophy, Guru Nanak Cup, Indira Gandhi Gold Cup, Intercontinental Cup, Khan Abdul Gaffar Khan Cup, Kuppuswamy Naidu Cup, Lady Rattan Tata Cup (Women), Lal Bahadur Shastri Cup, BMW Trophy, Maharaja Ranjit Singh Gold Cup, Modi Gold Cup, Murugappa Gold Cup, Nehru Trophy, Obaidullah Gold Cup, Rangaswami Cup. Rene Frank Trophy, Sanjay Gandhi Trophy, Scindia Gold Cup, Shriram Trophy, Sanjay Gandhi Trophy, Tun Abdul Razak Cup, Wellington Cup, World Cup, Yadavindra Cup.

Horse Racing: Blue Riband, Derby, Grand National Cup.

Kabaddi: Federation Cup.

Kho-Kho: Federation Cup.

Polo: Ezat Cup, Prithi Singh Cup, Radha Mohan Cup, Winchester Cup.

Rugby: Webb Ellis Trophy, Calcutta Cup

Shooting: North Wales Cup, Welsh Grand Prix.

Table Tennis: Asian Cup, Berna Bellack Cup, Corbillion Cup (Women), Electra Gold Cup, Gasper-Giest Prize, Jayalaxmi Cup (Women), Kamala Ramanujan Cup, Pethapuram Cup (Men), Swaythling Cup (Men), Travancore Cup (Women), U Thant Cup, World Cup.

Tennis: Davis Cup, Federation Cup, Hamlet Cup, Mercedes Cup, Nation's Cup, Wimbledon Trophy, U.S. Open, French Open, Australian Open, Hopman Cup.

Volleyball: Federation Cup, Shivanthi Gold Cup, World Cup.

Weightlifting: World Cup.

Wrestling: Burdwan Shield, World Cup.

Yacht Racing: America Cup.

Olympic Games

The first modern Olympic Games took place in 1896, founded by the Frenchman Baron de Coubertin. They are held once every four years. Women first competed in 1900. The first separate Winter Olympic Games celebration was in 1924. Presently, the Winter Olympic Games take place between Summer Games celebrations. The Olympic motto is "Citius, Altius, Fortius" coined by Father Dixon in 1897, and introduced in 1920 for the first time.

Venues

Year	Summer Games	Winter Games
1896	Athens, Greece	--
1900	Paris, France	--
1904	St.Louis, USA	--
1908	London, UK	--
1912	Stockholm, Sweden	--
1920	Antwerp, Belgium	--
1924	Paris, France	Chamonix, France
1928	Amsterdam, The Netherlands	St.Mortiz, Switzerland
1932	Los Angeles, USA	Lake Placid, USA
1936	Berlin, Germany	Garmisch-Partenkirchen, Germany
1948	London, UK	St.Moritz, Switzerland
1952	Helsinki, Finland	Oslo, Norway
1956	Melbourne, Australia	Cortina, Italy
1960	Rome, Italy	Squaw Valley, USA
1964	Tokyo, Japan	Innsbruck, Austria
1968	Mexico City, Mexico	Grenoble, France
1972	Munich, Germany	Sapporo, Japan
1976	Montreal, Canada	Innsbruck, Austria
1980	Moscow, Russia	Lake Placid, USA
1984	Los Angeles, USA	Sarajevo, Yugoslavia
1988	Seoul, South Korea	Calgary, Canada
1992	Barcelona, Spain	Albertville, France
1994	--	Lillehammer, Norway
1996	Atlanta, USA	--
1998	--	Nagano, Japan
2000	Sydney, Australia	--
2002	--	Salt Lake City USA
2004	Athens, Greece	--
2006	--	Turin, Italy
2008	Beijing, China	--
2010	Vancouver, Canada	--
2012	London, Britain	
2014	--	Sochi, Russia
2016	Rio-de-Janeiro (Brazil)	--
2018	--	Pyeongchang, South Korea
2020	Tokyo (Japan)	--

Commonwealth Games

First held as the British Empire Games in 1930. They take place every four years and between Olympic celebrations. They became the British Empire and Commonwealth Games in 1954; the current title was adopted in 1970.

Year	Venue
1930	Hamilton, Canada
1934	London, England
1938	Sydney, Australia
1950	Auckland, New Zealand
1954	Vancouver, Canada
1958	Cardiff, Wales
1962	Perth, Australia
1966	Kingston, Jamaica
1970	Edinburgh, Scotland
1974	Christchurch, New Zealand
1978	Edmonton, Canada
1982	Brisbane, Australia
1986	Edinburgh, Scotland
1990	Auckland, New Zealand
1994	Victoria, Canada

Year	Venue
1998	Kuala Lumpur, Malaysia
2002	Manchester, England
2006	Melbourne, Australia
2010	New Delhi, India
2014	Glasgow, Scotland
2018	Gold Coast City, Queensland, Australia

Asian Games

Motto: "Ever Onward" (coined by Pt.Jawaharlal Nehru)
Emblem: A bright full rising Sun with interlocking rings.

Year	Venue
1951	New Delhi, India
1954	Manila, The Philippines
1958	Tokyo, Japan
1962	Jakarta, Indonesia
1966	Bangkok, Thailand
1970	Bangkok, Thailand
1974	Teheran, Iran
1978	Bangkok, Thailand
1982	New Delhi, India
1986	Seoul, South Korea
1990	Beijing, China
1994	Hiroshima, Japan
1998	Bangkok, Thailand
2002	Busan, South Korea
2006	Doha, Qatar
2010	Guangzhou, China
2014	Incheon, South Korea
2019	Hanoi, Vietnam

World Cup (Football)

The largest single sporting event in the world is the World Cup Football tournament. The first edition was held in 1930. In 2010, South Africa and in 2014 Brazil will host this mega event.

The World Cup is now officially called the Jules-Rimet Cup.

The following are the World Cup winners since its inception:

Year	Venue	Winner	Runner-up
1930	Uruguay	Uruguay	Argentina
1934	Italy	Italy	Czechoslovakia
1938	France	Italy	Hungary
1950	Brazil	Uruguay	Brazil
1954	Switzerland	West Germany	Hungary
1958	Sweden	Brazil	Sweden
1962	Chile	Brazil	Czechoslovakia
1966	Britain	England	West Germany
1970	Mexico	Brazil	Italy
1974	West Germany	West Germany	The Netherlands
1978	Argentina	Argentina	The Netherlands
1982	Spain	Italy	West Germany
1986	Mexico	Argentina	West Germany
1990	Italy	West Germany	Argentina
1994	U.S.A.	Brazil	Italy
1998	France	France	Brazil
2002	South Korea, Japan	Brazil	Germany
2006	Germany	Italy	France
2010	South Africa	Spain	Netherlands
2014	Brazil	Germany	Argentina
2018	Russia	–	–
2022	Qatar	–	–