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COMBINED CIVIL SERVICES EXAMINATION - IV

GROUP IV

General Studies Aptitude and Mental Ability

தமிழ் தகுதி மற்றும் மதிப்பீட்டுத் தேர்வு

Part A - தமிழ் தகுதி மற்றும் மதிப்பீட்டுத் தேர்வு

இலக்கணம்	25 கேள்விகள்
சொல்லகராதி	15 கேள்விகள்
எழுதும் திறன்	15 கேள்விகள்
கலைச் சொற்கள்	10 கேள்விகள்
வாசித்தல் - புரிந்து கொள்ளும் திறன்	15 கேள்விகள்
எளிய மொழி பெயர்ப்பு	5 கேள்விகள்
இலக்கியம், தமிழ் அறிஞர்களும், தமிழ்த்தொண்டும்	15 கேள்விகள்

Part B - GENERAL STUDIES

GENERAL SCIENCE	(5 Questions)
GEOGRAPHY	(5 Questions)
HISTORY, CULTURE OF INDIA AND INDIAN NATIONAL MOVEMENT	(10 Questions)
INDIAN POLITY	(15 Question)
INDIAN ECONOMY AND DEVELOPMENT	
ADMINISTRATION IN TAMILNADU	(20 Questions)
தமிழ்நாட்டின் வரலாறு, மரபு, பண்பாடு மற்றும் சமூக-அரசியல் இயக்கங்கள்	(20 கேள்விகள்)

Part C - APTITUDE AND MENTAL ABILITY

APTITUDE	(15 Questions)
REASONING	(10 Questions)

TNPSC
GROUP-IV

2025

Original
Question Paper
with Explanatory
Answers

V.V.K.Subburaj

PREPARED AS PER
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SURA COLLEGE OF COMPETITION

Head Office: 1620, 'J' Block, 16th Main Road, Anna Nagar,
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e-mail: suracollege@gmail.com; enquiry@surabooks.com; website: www.surabooks.com

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COMBINED CIVIL SERVICES EXAMINATION – IV (Group IV Services)

**[Single Paper in SSLC Standard consisting of General Studies (75 Questions),
Aptitude and Mental Ability (25 Questions) and Tamil Eligibility-cum-Scoring Test (100 Questions)]**

Part A: GENERAL STUDIES (SSLC Standard – 75 Questions)

Unit I: General Science (5 Questions)

Nature of Universe - Measurement of physical quantities - General scientific laws in motion - force, pressure, and energy - Everyday application of the basic principles of mechanics, electricity, magnetism, light, sound, heat, and nuclear physics in our daily life; Elements and compounds, acids, bases, salts, petroleum products, fertilizers, pesticides, metallurgy, and food adulterants; main concepts of life science, classification of living organisms, evolution, genetics, physiology, nutrition, health and hygiene, human diseases; Environmental science; Latest inventions in science and technology; Current affairs.

Unit II: Geography (5 Questions)

Earth location - Physical features - Monsoon, rainfall, weather, and climate - Water resources - Rivers - Soil, Minerals, and Natural resources - Forest and Wildlife - Agriculture pattern; Transport - Communication; Population density and distribution in Tamil Nadu and India; Calamities - Disaster management - Environment - Climate change; Geographical landmarks; Current affairs.

Unit III: History, Culture of India, and Indian National Movement (10 Questions)

Indus Valley Civilization - Guptas, Delhi Sultans, Mughals, and Marathas – South Indian History; National Renaissance - Early uprising against British Rule - Indian National Congress - Emergence of Leaders - B.R.Ambedkar, Bhagat Singh, Bharathiar, V.O.Chidambaranar, Thanthai Periyar, Jawaharlal Nehru, Rabindranath Tagore, Kamarajar, Mahatma Gandhi, Maulana Abul Kalam Azad, Rajaji, Subhash Chandra Bose, Muthulaksmi Ammaiyar, Muvalur Ramamirtham, and other National Leaders; Different modes of agitation of Tamil Nadu and movements; Characteristics of Indian Culture, Unity in Diversity - Race, Language, Custom; India as a secular state.

Unit IV: Indian Polity (15 Questions)

Constitution of India - Preamble to the Constitution – Salient features of the Constitution - Union, State, and Union Territory; Citizenship, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy; Union Executive, Union Legislature – State Executive, State Legislature - Local Governments, Panchayat Raj; Spirit of federalism: Centre - State relationships; Election - Judiciary in India - Rule of Law; Corruption in public life - Anti-Corruption measures - Lokpal and Lokayukta – Right to Information - Empowerment of Women - Consumer Protection Forums - Human Rights Charter; Political parties and political system in Tamil Nadu and India; Current affairs.

Unit V: Indian Economy and Development Administration in Tamil Nadu (20 Questions)

Nature of Indian economy - Five-year plan models - an assessment - Planning Commission and Niti Aayog; Sources of revenue - Reserve Bank of India - Finance Commission - Resource sharing between Union and State Governments - Goods and Services Tax; Economic trends - Employment generation, Land reforms and Agriculture - Application of Science and Technology in Agriculture; Industrial growth - Rural Welfare oriented programmes - Social problems – Population, Education, Health, Employment, Poverty; Social Justice and Social Harmony as the cornerstones of socioeconomic development; Education and Health systems in Tamil Nadu; Geography of Tamil Nadu and its impact on economic growth; Welfare schemes of Government; Current socio-economic issues; Current affairs.

Unit VI: History, Culture, Heritage, and Socio-Political Movements of Tamil Nadu (20 Questions)

History of Tamil Society, related archaeological discoveries - Tamil Literature from Sangam age till contemporary times; Thirukkural - Significance as a Secular Literature - Relevance to everyday life - Impact of Thirukkural on Humanity - Thirukkural and Universal Values – Relevance to Sociopolitico-economic affairs - Philosophical content in Thirukkural; Role of Tamil Nadu in freedom struggle - Early agitations against British Rule - Role of women in freedom struggle; Various Social reformers, Social reform movements and Social transformation of Tamil Nadu.

Part B: APTITUDE AND MENTAL ABILITY (SSLC Standard – 25 Questions)

Unit I: Aptitude (15 Questions)

Simplification - Percentage - Highest Common Factor (HCF) - Lowest Common Multiple (LCM) - Ratio and Proportion - Simple interest - Compound interest - Area - Volume - Time and Work.

Unit II: Reasoning (10 Questions)

Logical reasoning - Puzzles - Dice - Visual reasoning - Alpha numeric reasoning - Number series.

PART - B GENERAL STUDIES

101. Assertion (A) : In 1892, Tremenheere report was accepted by the Government for increasing the income of the Government, to allot the poramboke land to down trodden community.

Reason (R) : In Chengalpet, the Panchamer Schools were run by the Philanthropic individuals in Panchami Land for promoting Education for downtrodden community people.

Select the correct answer :

- A) [A] is true [R] is false
- B) Both [A] and [R] are true and [R] is the correct explanation of [A]
- C) [A] is false [R] is true
- D) Both [A] and [R] are true but [R] is not the correct explanation of [A]

Explanation :

Ans : (A)

In 1885, Madras Presidency Government declared financial assistance policies for the downtrodden communities and also for the government oriented new schools for the lower caste people.

The Tremenheere Report, officially titled "**Notes on the Pariahs of Chingleput**," was submitted in 1892 by J.H.A. Tremenheere, then acting collector of Chingleput (now Chengalpattu) in the Madras Presidency. The report focused on the socio-economic conditions of Dalits (then referred to as "Pariahs" or "Depressed Classes") in the region. It recommended granting Dalits access to land, which led to the British government's Government Order No. 1010/1892, allocating "Depressed Class conditional lands," later known as "panchami land," to them.

The report was part of a broader effort by the British colonial administration to address the socio-economic conditions of marginalized communities in India. The report highlighted the poverty, lack of land ownership, and social discrimination faced by Dalits in Chingleput.

Those excerpts are: People of downtrodden community were at low level in all aspects, particularly socioeconomic, educational spheres. Lands were denied for them. They were not permitted to build houses for their own. Educational opportunities were rejected. They were sold as slaves. Lots of lands were kept barren. Due to this, income for the government had been diminished. To increase the income of the government, lands could be distributed to the people.

There were so many recommendations present in the officers' report. In 1892, this report was considered and accepted by the government. Accordingly 12 lakh acres were distributed to the lower caste groups. These lands are called as "Panchami." Schools for lower caste groups are called as "Panchamer Schools".

"Panchamer" means people who are out of Varna System or excluded communities. Ayothidasa' and 'Singaravela' opined that "Panchamer Schools" can be called as "Adidraavidar" schools, since it is the traditional name carved to the category.

102. Arrange the following Finance Ministers of Tamil Nadu according to the Budget Year (Chronological Order)

1. Mr. Paneerselvam
2. Dr. Nedunchezhiyan
3. Mr. Palanivel Thiagarajan
4. Mr. Thangam Thennarasu

Codes :

- | | a) | b) | c) | d) |
|----|----|----|----|----|
| A) | 1 | 2 | 3 | 4 |
| B) | 4 | 3 | 2 | 1 |
| C) | 2 | 1 | 3 | 4 |
| D) | 1 | 4 | 2 | 3 |

Explanation :

Ans : (C)

Finance Ministers & Their Budget Tenures

1. Dr. V. R. Nedunchezhiyan

- ◆ First served as Finance Minister in 1969 under DMK rule.
- ◆ He presented multiple budgets in the 1970s and early 1980s.

2. Mr. O. Paneerselvam (OPS)

- ◆ First presented the Tamil Nadu budget in 2001 as Finance Minister under Jayalalithaa's government (AIADMK).
- ◆ Held the position again in subsequent AIADMK governments.

3. Mr. Palanivel Thiagarajan (PTR)

Presented the budget in 2021 and 2022 under M.K. Stalin's DMK government.

4. Mr. Thangam Thennarasu

Appointed Finance Minister in 2023, after PTR was shifted to IT & Digital Services.

103. Choose the right matches.

- | | |
|-----------------|-----------------------------|
| 1) New India | - Bharathi |
| 2) Thesapakthan | - V. V. Subramanian |
| 3) Nava Sakthi | - Thiru. V. Kalyanasundaram |
| 4) The Hindu | - G. Subramaniam |

Select the correct answer :

- A) (1) and (2) are correct
- B) (2) and (3) are correct
- C) (3) and (4) are correct
- D) (1) and (4) are correct

Explanation :

Ans : (B)

New India was founded by Anni Besant. She used it as a platform to voice her views on the Indian Freedom Struggle and promote the idea of Home Rule. She also started the weekly newspaper, 'The Commonwealth'.

V.V. Subramaniam was born in 1881 at Varakaneri village in Trichy district. He was a graduate of law and took it as his profession. He was also a well-known Tamil scholar and contributed a lot to its growth. He belonged to an extremist group of freedom fighters. His contemporaries include Subramanya Bharathi and V.O. Chidambaram Pillai, who subscribed to militant forms of resistance against the British colonial government. He went into exile in Pondicherry, then under French rule, when his militant activities attracted a warrant for his arrest from the British colonial government. He was considered as the father of modern Tamil short story. He also translated the Ramavatharam of Kambar and

Tirukkural into English. V.V. Subramaniyam was mentor of Vanchinathan. During Gandhi's visit to Pondicherry in 1917, V.V. Subramaniyam met him and became a follower of ahimsa. He was also a follower of Bal Gangadhar Tilak. He was the editor of the Tamil magazine 'Desabakthan'.

Navasakthi was a Tamil weekly magazine established in 1920 by Thiru Vi. Kalyanasundaram. It played a significant role in the Indian Independence Movement by supporting the self-rule and encourage public participation in freedom struggle. He advocated progressive ideas and social reforms.

The English Newspaper The Hindu was founded by G. Subramaniya Iyer along with Raghavachariar. It was launched as a weekly on 20th Sept. 1878 and later became a daily in 1889. Subramaniya Iyer served as the first editor of the Hindu.

104. Which of the following statements are true?

- 1) Congress boycotted the election which was held in 1923 in, Chennai.
- 2) Swaraj Party won 11 seats.
- 3) Justice Party formed Ministry in Chennai.
- 4) Kamaraj led the Non-Co-operation movement in Chennai.

Select the correct answer :

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

Explanation :

Ans : (D)

The second legislative council elections in the Madras Presidency (which included Chennai, then known as Madras) were held in 1923. The elections began on October 31, 1923, but due to heavy rains and flooding, polling was delayed and completed only by November 10, 1923. This was the second election held under the Montagu-Chelmsford Reforms which introduced a system of dyarchy in British Indian provinces. The first council's term ended on September 11, 1923. Elections were held for only 44 constituencies, while 20 members were elected unopposed from the remaining 17 constituencies. The right to vote was limited to those who met certain property qualifications.

Overall, the Madras Presidency saw a 36.2% turnout. Specific turnout percentages included 58.8% in Madras city and 77% in Tirunelveli-Palayamcotai urban constituency.

Justice Party was the ruling party at the time, although it had suffered a split, with a splinter group forming the Anti-Ministerialists. Swaraj Party a group that broke away from the Indian National Congress and contested the elections. The Madras Province Swarajya Party was established in 1923, led by S. Satyamurti and S. Srinivasa Iyengar.

Anti-Ministerialists: A splinter group from the Justice Party. Several independent candidates also participated.

The Justice Party won the most seats (44 out of 127 elected seats), but did not secure a majority. The Swaraj Party won 11 seats. The Anti-Ministerialists secured 37 seats. Independents won 6 seats.

Despite the Justice Party not having a clear majority, Madras Governor Willington invited it to form the government. The leader of the Justice Party, Theagaraya Chetty, nominated the

incumbent Chief Minister, Panagal Raja, to continue in the role for a second term.

A no-confidence motion, led by the opposition headed by C. R. Reddy, was brought against the Justice Party government on the first day of its new term, but it survived with the support of non-elected members.

The second Justice Party government continued and expanded on the policies of the first government, including the passage of the Hindu Religious Endowment Bill in 1925, which brought many Hindu temples under the control of the provincial government. This act set a precedent for later legislation regarding the administration of temples.

In Tamil Nadu the Non-co-operation Movement was strong during the years 1921-23. Beginning in March 1921 there were campaigns of Non-Cooperation against the foreign regulations. In 1921 and 1922 there were campaigns against the consumption of liquor in many parts of the province. Temperance campaign was particularly prominent in Madurai. Non-Cooperation had been a success in Tamil Nadu. C. Rajagopalachari, S. Satyamurthi and E. V. Ramaswami were the important leaders of the Non-Cooperation Movement in Tamil Nadu. At that time E. V. Ramaswami was the President of the Tamil Nadu Congress Committee.

105. The GSLV-F15 is launched on by ISRO.

- A) January 29, 2025
- B) March 08, 2025
- C) January 29, 2024
- D) March 08, 2024

Explanation :

Ans : (A)

The GSLV F15 was the 17th flight of the GSLV and the 11th flight of MK2 variant using indigenous cryogenic engine. It was launched on 29th January 2025 at 06:23 IST. It is also the 100th overall launch of an ISRO rocket since SKV-3 E1 in 1979. The satellite was injected into a geo-stationary orbit 19 minutes after launch.

The primary purpose of the GSLV-F15 mission, carrying the NVS-02 satellite that is part of India's NavIC system which aims to provide independent regional navigation & positioning services.

106. Assertion [A] : Rabindranath Tagore surrendered his knighthood.

Reason [R] : On 13th April 1919 - Jallianwala Bagh Massacre occurred in Amritsar.

Select the correct answer :

- A) [A] True [R] False
- B) Both [A] and [R] are true and [R] is the correct explanation of [A]
- C) [A] is False [R] is True
- D) Both [A] and [R] are true but [R] is not the correct explanation of [A]

Explanation :

Ans : (B)

On 13th April 1919, during the festival of Baisakhi, thousands of unarmed men, women, and children had gathered peacefully at Jallianwala Bagh in Amritsar, Punjab, to protest against the Rowlatt Act and the arrest of two nationalist leaders, Dr. Satyapal and Dr. Saifuddin Kitchlew. Acting without warning, General Reginald Dyer entered the enclosed garden with his

troops, blocked the only exit, and ordered them to open fire on the crowd. The firing lasted for about ten minutes, and approximately 1,650 rounds were fired, killing hundreds of people instantly. According to British estimates, 379 people were killed, but Indian sources claimed the toll was over 1,000, with more than 1,200 injured. This brutal act shocked the entire nation and led to widespread outrage. In protest, Rabindranath Tagore renounced his knighthood, and Mahatma Gandhi intensified the freedom movement by launching the Non-Cooperation Movement. The massacre exposed the inhuman face of British colonial rule and marked a significant turning point in India's struggle for independence.

107. Match the following:

Name of the Act	Enacted year
a) Consumer Protection Rules	1. 1930
b) Drug Control Act	2. 1987
c) The monopolies and Restrictive Trade Practice Act	3. 1950
d) Goods and Services Sales Act	4. 1969

Codes :

	a)	b)	c)	d)
A)	2	3	4	1
B)	3	1	2	4
C)	1	3	4	2
D)	4	1	2	3

Explanation :

Ans : (A)

Consumer Protection Rules – 1987:

The Consumer Protection Rules were framed under the Consumer Protection Act of 1986 and came into force in 1987. The primary objective of these rules is to safeguard the rights of consumers against unfair trade practices, defective goods, and deficient services. The rules provided for the establishment of consumer dispute redressal agencies at the district, state, and national levels, making the grievance redressal process more accessible and transparent for consumers across India.

Drug Control Act – 1950:

The Drugs (Control) Act, 1950 was enacted to regulate the sale, supply, and distribution of essential drugs. This Act was introduced in the aftermath of shortages and hoarding of life-saving medicines in the early years after independence. It empowers the government to fix maximum prices for drugs, control the quantity of drugs a dealer can possess or sell, and monitor distribution. The main aim was to ensure the availability of essential medicines to the public at fair prices and prevent black marketing.

The Monopolies and Restrictive Trade Practices Act – 1969:

The MRTP Act of 1969 was enacted to prevent the concentration of economic power in the hands of a few and to curb monopolistic, restrictive, and unfair trade practices in India. The Act established the MRTP Commission to oversee and investigate anti-competitive behavior. It aimed to promote fair competition in the market for the benefit of consumers. However, with the liberalization of the Indian economy, this Act was repealed and replaced by the more comprehensive Competition Act, 2002.

Goods and Services Sales Act – 1930:

The Sale of Goods Act, 1930 governs contracts relating to the sale of goods in India. Originally a part of the Indian Contract

Act, 1872, it was later separated into an independent statute. The Act defines various terms such as goods, price, buyer, and seller, and lays down rules regarding the transfer of ownership, delivery, and rights and duties of parties involved in the sale of goods. It is a foundational law for commercial transactions involving movable goods and continues to be relevant alongside modern contract laws.

108. Arrange the following in chronological order:

1. Bharat Ratna
2. Padma Vibhushan
3. Padma Sri
4. Padma Bhushan

Select the correct answer :

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

Explanation :

Ans : (B)

Civilian Awards

1. Bharat Ratna – 1954 (January 2)
2. Padma Vibhushan – 1954 (January 2)
3. Padma Bhushan – Initially a category under Padma Vibhushan in 1954, became distinct in 1955
4. Padma Shri – 1954 (as "Padma Vibhushan Tisra Warg"), renamed in 1955

The Bharat Ratna, instituted in 1954, is the highest civilian award in India, conferred for exceptional service in fields like art, literature, science, public service, and later extended to sports. It is awarded without regard to race, occupation, position, or sex, and recipients receive a peepal leaf-shaped medallion and a citation.

The Padma Vibhushan, also established in 1954, is the second-highest civilian award, given for exceptional and distinguished service in any field including public affairs and government service.

The Padma Bhushan was initially part of the Padma Vibhushan under a three-tier classification in 1954 but was separated as an independent third-highest civilian award in 1955; it recognizes distinguished service of a high order.

The Padma Shri, also formalized in 1955, is the fourth-highest civilian honor, awarded for distinguished service in any field, and is widely regarded as the most inclusive of the Padma series in terms of diversity of recipients.

109. If a : b = 3 : 7 and b : c = 7 : 6, then Find the ratio between c and a

- A) 1 : 2
- B) 3 : 6
- C) 6 : 7
- D) 2 : 1

Explanation :

Ans : (D)

$$a : b = 3 : 7$$

$$b : c = 7 : 6$$

$$a : b : c = 3 \times 7 : 7 \times 7 : 7 \times 6$$

$$= 21 : 49 : 42$$

$$c : a = 42 : 21 \text{ (i.e.) } 2 : 1$$

110. The ratio of two numbers is 3 : 4 and H.C.F is 4. Their L.C.M. is _____

- A) 48
- B) 38
- C) 58
- D) 68

Explanation :

Ans : (A)

Let the numbers are $3x$ and $4x$

As the H.C.F. is the common factor so H.C.F. is x

$$\text{So, H.C.F} = x = 4$$

So the numbers are 12 and 16

$L.C.M \times H.C.F = \text{Product of two numbers}$

$\Rightarrow L.C.M = \text{Product} / H.C.F$

$$\Rightarrow L.C.M = \frac{12 \times 16}{4}$$

$\therefore L.C.M = 48$

111. A number x is divisible by 13. When this number is divided by 16, 24, 32 it leaves a remainder 6 in each case. The least value of x is _____

- A)** 390 **B)** 391
C) 389 **D)** 392

Explanation :

From the given options, the only number which is divisible by 13 is 390. So, 390 must be the answer.

Ans : (A)

112. Identify the correct answer.

Assertion [A] : Space MAITRI is a collaborative space mission between India and Australia.

Reason [R] : India aims to lower the cost of access to space through this mission.

- A)** Both [A] and [R] are correct and [R] is the correct explanation for [A]
B) Both [A] and [R] are correct, but [R] IS not the correct explanation for [A]
C) [A] is correct but [R] is wrong
D) [A] is wrong but [R] is correct

Explanation :

Ans : (C)

The Space MAITRI (Mission for Australia-India's Technology, Research and Innovation) mission is a collaborative effort between India and Australia to launch Australia's largest spacecraft, the 450kg Optimus, using India's Small Satellite Launch Vehicle (SSLV). This mission, scheduled for 2026, aims to foster closer ties between the space industries of both nations, focusing on sustainable space exploration and debris management.

The mission involves NewSpace India Limited (NSIL), the commercial arm of ISRO, and Australia's Space Machines Company.

The Optimus spacecraft, built by Space Machines Company, was launched by ISRO's SSLV.

Optimus is designed to inspect and potentially repair other satellites in orbit, contributing to space sustainability.

The mission aims to demonstrate technologies for managing space debris, a growing concern in the space environment.

It seeks to enhance cooperation between commercial, institutional, and governmental space organizations in both countries.

Space MAITRI represents a significant step in Australia-India space cooperation, highlighting the potential for joint ventures in the space sector and promoting sustainable space operations.

The Australian government is providing financial assistance of 8.5 million Australian dollars through its International Space Investment India Projects program.

113. Which of the following statement(s) is/are true about "The Mandal Commission Report"?

- i)** The commission used Three indicators i.e. Social, Educational and Economic. .

ii) In social indicator there were five criteria and educational indicators there were two criteria.

iii) In economic indicator there were four criteria. Thus there were 11 criteria used in the Mandal Commission Report.

Choose the correct answer :

- A)** (i) only **B)** (i) and (iii) only
C) (i) and (ii) only **D)** (ii) and (iii) only

Explanation :

Ans : (B)

The Mandal Commission Report (1980) used three indicators to identify Socially and Educationally Backward Classes (SEBCs):

1. Social (3 criteria)
2. Educational (2 criteria)
3. Economic (4 criteria)

This makes a total of 11 criteria (3 + 2 + 4).

- ◆ **Statement (i) is correct:** The commission used three indicators—Social, Educational, and Economic.
- ◆ **Statement (ii) is incorrect:** The social indicator had 3 criteria (not 5).
- ◆ **Statement (iii) is correct:** The economic indicator had 4 criteria, totaling 11 criteria.

Thus, the correct combination is (i) and (iii) only (Option B).

Mandal Commission (1979-1980)

The Mandal Commission, officially known as the Second Backward Classes Commission, was established in 1979 under Prime Minister Morarji Desai and chaired by B.P. Mandal. Its purpose was to identify socially and educationally backward classes (OBCs) and recommend measures for their advancement, including reservations in government jobs and educational institutions.

Key Findings & Recommendations (1980):

1. Identified 3,743 OBC castes (52% of India's population).
2. Recommended 27% reservation for OBCs in central government jobs and public sector units (in addition to the existing 22.5% for SC/STs).
3. Used 11 criteria (Social: 3, Educational: 2, Economic: 4) to determine backwardness.

Implementation & Impact:

- ◆ The report was implemented in 1990 by PM V.P. Singh, leading to widespread protests (Anti-Mandal Agitation).
- ◆ Later upheld by the Supreme Court in Indra Sawhney Case (1992), with a 50% cap on total reservations.

114. Choose the correct pair :

1. Bombay plan - 1940
2. Gandhian plan - 1945
3. People's plan - 1944
4. Sarvodaya plan - 1950

Choose the correct answer :

- A)** 2 and 3 are correct
B) 1 and 2 are correct
C) 1 and 4 are correct
D) 2 and 4 are correct

Explanation :

Ans : (C)

After Independence, in 1948, a declaration of industrial policy was announced. The policy suggested the creation of a National Planning Commission and the elaboration of the policy of a mixed economic system. On January 26, 1950, the

Constitution came into force. The Planning Commission was created on March 15, 1950 and the five year plan era began on April 1, 1951 with the launch of the first five year plan (1951-56). The evolution of planning in India is stated below:

1. **Sir M. Vishveshwarayya (1934):** a prominent engineer and politician made his first attempt in laying foundation for economic planning in India in 1934 through his book, "Planned Economy of India". It was a 10 year plan.
2. **Jawaharlal Nehru (1938):** set-up "National Planning Commission" by a committee but due to the changes in the political era and second World War, it did not materialize.
3. **Bombay Plan (1940):** The 8 leading industrialists of Bombay presented "Bombay Plan". It was a 15 Year Investment Plan.
4. **S. N Agarwal (1944)** gave the "Gandhian Plan" focusing on the agricultural and rural economy.
5. **M.N. Roy (1945)** drafted "People's Plan". It was aiming at mechanization of agricultural production and distribution by the state only.
6. **J.P. Narayan (1950)** advocated, "Sarvodaya Plan" which was inspired by Gandhian Plan and with the idea of Vinoba Bhawe. It gave importance not only for agriculture, but encouraged small and cottage industries in the plan.

115. Assertion [A] : K.M. Balasubramanian, author of South Indian, Celebrities, compared Dr. C. Natesa Mudaliyar to Mahatma Gandhi.

Reason [R] : He was the epitome of love, character, tolerance, compromise and he was the heart of Justice Party.

Select the correct answer :

- A) [A] is true but [R] is false
- B) Both [A] and [R] are true and [R] is the correct explanation of [A]
- C) [A] is false [R] is true
- D) Both [A] and [R] are true but [R] is not the correct explanation of [A] is correct

Explanation :

Ans : (B)

K.M. Balasubramanian, the author of South Indian Celebrities, drew a significant comparison between Dr. C. Natesa Mudaliyar and Mahatma Gandhi. He praised Dr. Natesa Mudaliyar as an epitome of love, character, tolerance, and compromise, highlighting his moral stature and leadership qualities. This comparison was not just symbolic but reflective of Dr. Mudaliyar's profound influence in South Indian politics and society. He was also considered the heart of the Justice Party, contributing immensely to the Dravidian movement and the upliftment of non-Brahmin communities in the early 20th century. Through this comparison, Balasubramanian emphasized the integrity and reformist zeal of Dr. Natesa Mudaliyar, placing him among the most respected leaders of his time.

116. Match the Works/Books with the author's:

- | | |
|----------------------|--------------------------------|
| a) Vetriveerakai | 1. Avaiyar |
| b) Nanneri | 2. Kumara Kurubarar |
| c) Neethinerivilakam | 3. Athiveerarama Pandiyar |
| d) Nalvazhi | 4. Duraimangalam Sivaprakasara |

Codes :

- | | a) | b) | c) | d) |
|----|----|----|----|----|
| A) | 1 | 3 | 4 | 2 |
| B) | 1 | 4 | 2 | 3 |
| C) | 3 | 4 | 2 | 1 |
| D) | 3 | 4 | 1 | 2 |

Explanation :

Ans : (C)

வினாவில் கொடுக்கப்பட்டுள்ள நூல்கள் சங்கம் மருவிய காலத்திற்குப் பின் தோன்றிய அற நூல்களாகும்.

1. வெற்றிவேற்கை :

இந்நூல் பாண்டிய மன்னன் அதிவீர பாண்டியரால் இயற்றப்பட்டது. இவர் கி.பி.11 ஆம் நூற்றாண்டைச் சேர்ந்தவர். இந்நூல் முதலில் நறுந்தொகை என்று அழைக்கப்பட்டது. நறுந்தொகை என்றால் நல்ல நீதிகளைத் தொகுத்தளிக்கும் நூல் என்று பெயராகும். இந்நூலில் 82 பாடல்கள் உள்ளன.

வெற்றி வேற்கை வீர ராமன்

கொள்கையாளி குலசேகரன் புகல்

நற்றமிழ் தெரிந்த நறுந்தொகை தன்னால்

குற்றம் களைவோர் குறைவிலாதவரே

என்ற பாடல் மூலம் இந்நூலின் ஆசிரியர் அதிவீரராம பாண்டியர் என அறியலாம்.

2. நன்னெறி :

இந்நூல் சிவப்பிரகாச சுவாமிகளால் இயற்றப்பட்டது. துறவியான இவர் துறைமங்கலம் என்ற ஊரில் நெடுநாள்கள் தங்கியிருந்ததால் துறைமங்கலம் துறைமங்கலம் சிவப்பிரகாச சுவாமிகள் என அழைக்கப்பட்டார். இவர் கி.பி.17 ஆம் நூற்றாண்டைச் சேர்ந்தவர்.

நாற்பது பாடல்களைக் கொண்ட இந்நூல் மக்களை நல்வழிப்படுத்தும் அறநெறிகளைக் கூறுவதால் நன்னெறி என அழைக்கப்படுகிறது. இந்நூலில் உள்ள பாடல்கள் மகடு உன்னிலையாக, அதாவது ஒரு பெண்ணை அழைத்துக் கூறுவது போல் அமைந்துள்ளன.

3. நீதிநெறி விளக்கம் :

இந்நூலை இயற்றியவர் குமரகுருபரர் ஆவார். இவரது காலம் கி.பி.16 ஆம் நூற்றாண்டு ஆகும். இந்நூலில் 102 வெண்பாக்கள் உள்ளன. மதுரையை ஆண்ட திருமலை மன்னரின் விருப்பத்திற்கேற்ப இந்நூலை குமரகுருபரர் இயற்றினார்.

4. நல்வழி :

இந்நூலை இயற்றியவர் கி.பி. 12 ஆம் நூற்றாண்டைச் சேர்ந்த ஓளவையார் ஆவார். வாழ்க்கைக்கு நல்வழியைக் காட்டும் நூல் என்பதால் நல்வழி என்று பெயர் பெற்றது. இந்நூலில் கடவுள் வாழ்த்து உள்பட 41 வெண்பாக்கள் உள்ளன.

117. Assertion [A] : Climate, Relief, Soil and Natural resources are influencing the distribution of population.

Reason [R] : Birth and death rate does not affect the distribution of population.

Select the correct answer :

- A) [A] is true, but [R] is false
- B) [A] is false, but [R] is true
- C) Both [A] and [R] are true, and [R] is the correct explanation of [A]
- D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

Explanation :

Ans : (A)

Assertion [A]:

"Climate, Relief, Soil and Natural resources are influencing the distribution of population." - True

These physical factors greatly influence where people choose to live:

- ◆ **Climate:** Moderate climates (e.g., coastal regions, river valleys) are more attractive than extreme hot/cold regions.
- ◆ **Relief:** Plains are more densely populated than mountainous or rugged terrain.
- ◆ **Soil:** Fertile soil supports agriculture and higher population density (e.g., Ganga Basin).
- ◆ **Natural Resources:** Areas rich in resources (like coal, water, minerals) attract industries and hence more population.

Reason [R]:

"Birth and death rate does not affect the distribution of population." - **False**

- ◆ Birth and death rates affect the growth rate of population in an area.
- ◆ Regions with high birth rates tend to have rapidly growing populations (e.g., Sub-Saharan Africa).
- ◆ Low death rates due to better healthcare can also increase population.
- ◆ Hence, demographic factors do influence how population is distributed and changes over time.

118. Which of the following points were accepted in Gandhi-Irwin Pact?

- i) People allowed to make salt for their consumption.
- ii) Not releasing the political prisoners who had not indulged in violence.
- iii) Permitted picketing of foreign cloth shops.
- iv) Reduced the death sentence of Bhagat Singh and his Comrades.

Select the correct answer :

- A) (i) and (ii) only B) (i) and (iii) only
C) (ii) and (iii) only D) (ii) and (iv) only

Explanation :

Ans : (B)

Accepted Provisions in the Gandhi-Irwin Pact:

(i) People allowed to make salt for their consumption - **Accepted**

- ◆ One of the major demands of Gandhi was to allow people to make salt.
- ◆ British agreed to allow peaceful manufacture of salt by coastal communities for personal use.

(ii) Not releasing the political prisoners who had not indulged in violence - **Not Accepted as Stated**

- ◆ Actually, political prisoners not involved in violence were released.
- ◆ Those involved in violence (like Bhagat Singh) were not released.
- ◆ So, the statement is misleading — it says they did not release those not involved in violence, which is false.

(iii) Permitted picketing of foreign cloth shops - **Accepted**

- ◆ Peaceful picketing of foreign cloth and liquor shops was allowed.

(iv) Reduced the death sentence of Bhagat Singh and his Comrades - **Not Accepted**

- ◆ This was not accepted in the pact.
- ◆ Gandhi appealed, but British refused to commute the death sentence of Bhagat Singh, Rajguru, and Sukhdev.

The Gandhi-Irwin Pact was a political agreement signed on 5th March 1931 between Mahatma Gandhi and the then Viceroy of India, Lord Irwin. It marked a truce between

the British Government and the Indian National Congress during the Civil Disobedience Movement. As per the pact, the British agreed to release political prisoners not involved in violence, permit peaceful picketing of foreign cloth and liquor shops, and allow coastal people to make salt for personal use. In return, Gandhi agreed to suspend the Civil Disobedience Movement and attend the Second Round Table Conference in London as the sole representative of the Indian National Congress. However, the British refused to commute the death sentences of revolutionaries like Bhagat Singh, which disappointed many Indians. Despite its limitations, the pact was a significant milestone in India's struggle for independence, as it acknowledged the Indian National Congress as a representative political force.

119. Directorate of Vigilance and Anti-corruption Tamil Nadu Toll free No. is

- (1) 1062 and 1963 (2) 1064 and 1965
(3) 1066 and 1967 (4) 1068 and 1969

Select the correct answer :

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

Explanation :

Ans : (B)

Toll-free number 1062 is used for reporting unsolicited international calls with local or national caller ID, or those with no caller ID displayed. 1962 is the emergency number for veterinary services.

1062 (and 1800 110 420): These toll-free numbers were established by the Department of Telecommunications (DoT) to allow the public to report suspicious international calls. This is to combat fraud and scams where international calls appear to be from local numbers or display no number at all. 1962: This number is used to access emergency veterinary services in various states across India, including Gujarat, Madhya Pradesh, Telangana, and Tamil Nadu. These services are provided by GVK EMRI and include medical, surgical, and obstetrics care for animals.

Toll-free numbers 1064 and 1965 are associated with the Directorate of Vigilance and Anti-Corruption (DVAC) in Tamil Nadu, India. Number 1064 is specifically designated as the Anti-Corruption Helpline, while 1965 serves as the Vigilance Helpline. These numbers allow the public to register complaints related to corruption and vigilance matters within the state.

This number is 1064 used to register complaints against corruption involving government officials and employees.

This number is 1065 for reporting general vigilance-related issues and concerns within the state's administration.

The DVAC uses these toll-free numbers to provide a convenient and accessible channel for citizens to report corruption and other malpractices.

The numbers, 1066 and 1967, are not commonly recognized toll-free numbers. 1066 is associated with the Earthquake and Tsunami Alert Centre in some regions. 1967 is not a standard emergency or toll-free number in most contexts. To clarify, 108 is the more common emergency number. For toll-free numbers in India, 1800 numbers are frequently used.

The numbers 1068 and 1969 are not standard, universally recognized toll-free numbers for any specific service or organization in India. It's possible these numbers are used

for internal purposes by a particular company or organization, or they might be outdated or incorrect. Typically, toll-free numbers in India start with 1800, followed by other digits. For general customer service or complaints, Airtel users can dial 198, and for other inquiries, they can dial 121.

120. Assertion [A] : Indian constitution is federal in nature.

Reason [R] : Indian constitution provides dual citizenship like United States of America.

Select the correct answer :

- A) [A] is false [R] is true
 B) Both [A] and [R] are true; and [R] is the "correct explanation, of [A]
 C) [A] is true [R] is false
 D) Both [A] and [R] are true but [R] is not the correct explanation of [A]

Explanation :

Ans : (C)

The Constitution of India establishes a federal system of Government. It contains all the usual features of a federation, viz., two Government, division of powers, written Constitution, supremacy of Constitution, rigidity of Constitution, independent judiciary and bicameralism.

However, the Indian Constitution also contains a large number of unitary or non-federal features, viz., a strong Centre, single Constitution, single citizenship, flexibility of Constitution, integrated judiciary, appointment of state governor by the Centre, all-India services, emergency provisions and so on.

Moreover, the term 'Federation' has nowhere been used in the Constitution. Article 1, on the other hand, describes India as a 'Union of States' which implies two things: one, Indian Federation is not the result of an agreement by the states; and two, no state has the right to secede from the federation.

Hence, the Indian Constitution has been variously described as 'federal in form but, unitary in spirit', 'quasi-federal' by K.C. Wheare, 'bargaining federalism' by Morris Jones, 'co-operative federalism' by Granville Austin, 'federation with a centralising tendency' by Ivor Jennings and so on.

In India, we have single citizenship. Only in USA, there is dual citizenship – one for the State and the other for the federating State. USA has 50 States. They are represented in state with 100 members (or) 2 members from each state irrespective of the size of the State or population. But in India, Raj Sabha (Council of States) represents States – federating units. But there is no uniformity in the representation.

121. If the HCF of 108 and 234 is, expressible of the form $23x - 51$ then what is the value of x ?

- A) 3 B) 2
 C) 4 D) 5

Explanation :

Ans : (A)

Prime factors of 108 : $2^3 \times 3^3$

Prime factors of 234 : $2 \times 3^2 \times 13$

The common prime factors are 2×3^2

$HCF = 2 \times 3^2 \Rightarrow 18$

The equation can be framed as $23x - 51 = 18$

$23x = 18 + 51$

$23x = 69$

$x = 3$

122. Find the HCF of, the polynomials $x^3 + x^2 - x + 2$ and $2x^3 - 5x^2 + 5x - 3$

- A) $x^2 - x + 1$ B) $x^2 + x - 1$
 C) $-7x + 7x - 7$ D) $7x^2 - 7x + 7$

Explanation :

Ans : (A)

$$\begin{array}{r} x^3 + x^2 - x + 2 \quad \overline{) 2x^3 - 5x^2 + 5x - 3} \\ \underline{2x^3 + 2x^2 - 2x + 4} \\ (-) (-) (+) (-) \\ -7x^2 + 7x - 7 \\ -7(x^2 - x + 1) \end{array}$$

$$\begin{array}{r} x^2 - x + 1 \quad \overline{) x^3 + x^2 - x + 2} \\ \underline{x^3 + x^2 + x} \\ (-) (+) (-) \\ 2x^2 - 2x + 2 \\ \underline{2x^2 - 2x + 2} \\ 0 \end{array}$$

$\therefore$ The polynomials of $x^3 + x^2 - x + 2$ & $2x^3 - 5x^2 + 5x - 3 = x^2 - x + 1$.

123. Match the following:

- | | |
|---|--|
| a) Financial Assistance to Dependent children | 1. Between the age group of 18 and 21 years |
| b) Maintenance of Orphan Destitute Girls | 2. Providing destitute, and orphan and unattached children |
| c) Foster Care Services Scheme | 3. Children below the age of 16 years |
| d) State After-Care Home for Boys | 4. Children between the age of 6 and 16 years |

Codes :

- | | | | |
|------|----|----|----|
| a) | b) | c) | d) |
| A) 2 | 3 | 1 | 4 |
| B) 4 | 2 | 3 | 1 |
| C) 3 | 4 | 2 | 1 |
| D) 2 | 4 | 1 | 3 |

Explanation :

Ans : (C)

(a) Financial Assistance to Dependent Children → Children below the age of 16 years

Matched with: 3

◆ This scheme offers monthly financial assistance to children who are destitute, abandoned, or have lost one or both parents.

◆ Implemented by many state governments (e.g., Punjab, Haryana, Delhi), usually for:

- Children below 16 years of age
- Belonging to economically weaker sections (BPL)
- Max 2 children per family may be supported

◆ Purpose: To reduce child labour, promote education, and support nutrition and health.

(b) Maintenance of Orphan and Destitute Girls → Children between the age of 6 and 16 years

Matched with: 4

◆ This is a shelter-cum-care scheme, providing:

- Free accommodation, food, education, clothing, and health services.

- ◆ Target group:
 - Girls aged 6 to 16 who are orphans, abandoned, or from extremely poor families.
- ◆ Implemented via Children's Homes or Residential Care Institutions under the Juvenile Justice (Care and Protection) Act, 2015.
- ◆ Aim: To protect girl children from trafficking, child marriage, and child labour.

(c) Foster Care Services Scheme → Destitute, orphan, and unattached children

Matched with: 2

- ◆ Foster care means placing a child in a family environment, apart from their biological parents, for care and protection.
- ◆ Key points:
 - Children are placed with fit families or persons when institutional care is not in the child's best interest.
 - Typically under the age of 18, with focus on those without proper family support.
- ◆ Governed by:
 - Section 44 of the Juvenile Justice Act, 2015
 - State Child Protection Societies (SCPS) manage these placements.
- ◆ Ensures emotional and social development in a family-like environment.

(d) State After-Care Home for Boys → Between the age group of 18 and 21 years

Matched with: 1

- ◆ This scheme targets boys who have left child care institutions (like observation or juvenile homes) on turning 18.
- ◆ Objectives:
 - Help in transitioning into mainstream society
 - Provide shelter, vocational training, job placement support, and counselling.
- ◆ Focuses on boys aged 18 to 21 years who:
 - Have no family support
 - Need guidance for economic and social rehabilitation
- ◆ Implemented by State Governments under Aftercare programmes.

124. Identify the incorrectly paired matches:

1. Lokpal and Lokayuktas Act - January 16th, 2014 came into force
2. Tamil declared as Classical Language - Oct 10, 2004
3. Election Commission of India - Article 324
4. National Integration Council in India - 1960

Select the correct answer :

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

Explanation :

The Lokpal and Lokayuktas Act, 2013, came into force on January 16, 2014. This act established the Lokpal at the centre and Lokayuktas in the states to inquire into allegations of corruption against certain public functionaries, according to India Code.

Ans : (B)

Tamil was declared as a classical language on October 12, 2004. This declaration made Tamil the first language to receive this status in India. The announcement was made by the Government of India, recognizing Tamil's rich history and literature.

Article 324 of the Indian Constitution deals with the Election Commission and its powers. It establishes the Election Commission as the body responsible for the superintendence, direction, and control of elections to Parliament, state legislatures, and the offices of President and Vice-President. The article also outlines the structure of the Election Commission, consisting of the Chief Election Commissioner and other Election Commissioners as determined by the President.

The National Integration Council (NIC) in India is a group of prominent political and public figures tasked with addressing issues related to communalism, casteism, and regionalism. It was initially convened in 1961 to combat these issues and promote national unity. The council includes members like cabinet ministers, chief ministers, opposition leaders, and prominent individuals from various fields.

125. The purpose of "Surya Ghar MuftBijli Yojana" is

- A) Installing roof top solar
B) Providing Houses to the poor
C) Insurance to old, age people
D) Financing to small industries

Explanation :

Ans : (A)

PM Surya Ghar: Muft Bijli Yojana is a landmark central government initiative launched on 13 February 2024 by Prime Minister Narendra Modi, aiming to revolutionize energy access through rooftop solar. It is designed to benefit 1 crore residential households across India by offering up to 300 units of free electricity per month through subsidized rooftop solar systems.

With an allocation of ₹ 75,021 crore, the scheme offers substantial subsidies: up to 60% of system cost for installations up to 2 kW, and 40% for additional capacity up to a maximum of 3 kW. Additionally, beneficiaries can access collateral-free loans up to ₹ 2 lakh at a modest 6.75% interest rate through public sector banks, making adoption more financially feasible. States such as Tamil Nadu, Rajasthan, Maharashtra, Gujarat, and Kerala are leading the way in installations.

126. Assertion [A] : The plan period 1966 - 69 were called as "Annual plans or plan holiday".

Reason [R] : Because of the two major conflicts with China and Pakistan.

Select the correct answer :

- A) [A] is true, [R] is false
B) Both [A] and [R] are true, but [R] is not a correct explanation of [A]
C) Both [A] and [R] are true, but [R] -is the correct explanation of [A]
D) [A] is false, [R] is true

Explanation :

Ans : (C)

The Third five-year plan (1961-66) in India was significantly impacted by the Indo-China war of 1962 and the Indo-Pak war of 1965, leading to a 'Plan Holiday' from 1966 to 1969.

HISTORY, CULTURE OF INDIA, AND INDIAN NATIONAL MOVEMENT

- ❖ Indus Valley Civilisation
- ❖ Vedic Culture in North India and Megalithic Culture in South India
- ❖ Early Tamil Society and Culture
- ❖ Ancient Cities of Tamilagam
- ❖ Rise of Territorial Kingdoms and New Religious Sects
- ❖ Jainism, Buddhism and Ajivika Philosophies in Tamil Nadu
- ❖ Emergence of State and Empire
- ❖ Polity and Society in Post-Mauryan Period
- ❖ The Guptas
- ❖ Harsha and the Rise of Regional Kingdoms
- ❖ South Indian History
- ❖ Emergence of New Kingdoms in North India
- ❖ Later Cholas and Pandyas
- ❖ Sources of Medieval India
- ❖ The Delhi Sultanate

- ❖ Vijayanagar and Bahmani Kingdoms
- ❖ Art and Architecture of Tamil Nadu
- ❖ The Mughal Empire
- ❖ The Rise of Marathas
- ❖ New Religious Ideas and Movements
- ❖ Cultural Developments in South India
- ❖ Arrival of Europeans
- ❖ From Trade to Territory
- ❖ Effects of British Rule
- ❖ Early Uprisings against British Rule
- ❖ Early Uprisings against British Rule in Tamil Nadu
- ❖ Social Reform Movements in Tamil Nadu
- ❖ Social Reform Movements in the 19th Century
- ❖ Indian National Movement
- ❖ Role of Tamil Nadu in Freedom Struggle
- ❖ Indian Culture

MODEL TESTS

INDUS VALLEY CIVILISATION

The Indus Valley Civilization (c. 2600–1900 BCE), also called the Harappan Civilization, was one of the world's earliest urban civilizations, spread across present-day India, Pakistan, and Afghanistan. Important sites include Harappa, Mohenjo-daro, Dholavira, Kalibangan, and Lothal. It featured well-planned cities, grid-pattern streets, advanced drainage, granaries, dockyards, standardized weights, seals, and long-distance trade with Mesopotamia. Agriculture, crafts, and commerce formed its economic base. People worshipped nature and fertility symbols. Excavations by Daya Ram Sahni, Rakhaladas Banerji, and Sir John Marshall revealed its greatness. Its decline around 1900 BCE is linked to climate change, river shifts, and economic decline.

Settlement of people

Initially, people lived in groups. Then they formed communities out of these groups. Then evolved the societies which in due course became civilisations.

People preferred to settle near the rivers because :

- ◆ The soil is fertile.
- ◆ Fresh water is available for drinking, watering livestock and irrigation.
- ◆ Easy movement of people and goods is possible.

Harappa

The ruins of Harappa were first described by the British East India Company soldier and explorer Charles Masson in his book. In 1856 when engineers laid a railway line connecting Lahore to Karachi, they discovered more burnt bricks. Without understanding their significance, they used the bricks for laying the rail road.

In the 1920s archaeologists began to excavate the cities of Harappa and Mohenjo-Daro. They unearthed the remains of these long-forgotten cities. In 1924 the Director General of ASI, Sir John Marshall, found many common features between Harappa and Mohenjo-Daro. He concluded that they were part of a large civilisation. Some slight differences are found in the earthenwares of Harappa and of Mohenjo-Daro. This made the researchers conclude that Harappa was older than Mohenjo-Daro.

The Archaeological Survey of India (ASI) was started in 1861 with Alexander Cunningham as Surveyor General. Its headquarters is located in New Delhi.

Sites on Indian borders

Archaeologists found major Harappan sites near Indian borders. They are : Manda, Rakhigarhi, Harappa, Mitathai, Kalibangan, Ganveriwala, Mohenjo-Daro, Kot Diji, Amri, Dholavira, Lothal.

Time Span of Indus Civilisation

Geographical range	South Asia
Period	Bronze Age
Time	3300 to 1900 BCE (determined by using the radiocarbon dating method)

Area	13 lakh sq.km
Cities	6 big cities
Villages	More than 200

Urban Civilisation

Harappan civilisation is said to be urban because of the following reasons.

- ◆ Well-conceived town planning
- ◆ Astonishing masonry and architecture
- ◆ Priority for hygiene and public health
- ◆ Standardised weights and measures
- ◆ Solid agricultural and artisanal base

Unique Features of Harappan Civilisation

Town planning is a unique feature of the Indus Civilisation. The Harappan city had two planned areas.

Mehergarh – the Precursor to Indus Civilisation

Mehergarh is a Neolithic site. It is located near the Bolan Basin of Balochistan in Pakistan. It is one of the earliest sites known. It shows evidence of farming and herding done by man in very early times. Archaeological evidence suggests that Neolithic culture existed in Mehergarh as early as 7000 BCE.

Streets and Houses

- ◆ The streets are observed to have a grid pattern. They were straight running from north to south and east to west and intersected each other at right angles.
- ◆ The roads were wide with rounded corners.
- ◆ Houses were built on both sides of the street. The houses were either one or two storeys.
- ◆ Most of the houses had many rooms, a courtyard and a well. Each house had toilets and bathrooms.
- ◆ The houses were built using baked bricks and mortar. Sun-dried bricks were also used. Most of the bricks were of uniform size. Roofs were flat.
- ◆ There is no conclusive evidence of the presence of palaces or places of worship.

Burnt bricks which are used in construction are strong, hard, durable, resistant to fire and will not dissolve in water or rain.

Drainage System

- ◆ Many of these cities had covered drains. The drains were covered with slabs or bricks.
- ◆ Each drain had a gentle slope so that water could flow.
- ◆ Holes were provided at regular intervals to clear the drains.
- ◆ House drains passed below many lanes before finally emptying into the main drains.
- ◆ Every house had its own soak pit, which collected all the sediments and allowed only the water to flow into the street drain.

Bronze Age : It is a historical period characterised by the use of articles made of bronze.

The Great Bath

The great bath was a large, rectangular tank in a courtyard. It may be the earliest example of a water-proof structure. The bath was lined with bricks, coated with plaster and made water-tight using layers of natural bitumen. There were steps on the north and south leading into the tank. There were rooms on three sides. Water was drawn from the well located in the courtyard and drained out after use.

The Great Granary

- ◆ The granary was a massive building with a solid brick foundation.
- ◆ Granaries were used to store food grain.
- ◆ The remains of wheat, barley, millets, sesame and pulses have been found there.

A granary with walls made of mud bricks, which are still in a good condition, has been discovered in Rakhigarhi, a village in Haryana, belonging to Mature Harappan Phase.

The Assembly Hall

The Assembly Hall was another huge public building at Mohenjo-Daro. It was a multi-pillared hall (20 pillars in 4 rows to support the roof).

Trade and Transport

- ◆ Harappans were great traders.
- ◆ Standardised weights and measures were used by them. They used sticks with marks to measure length.
- ◆ They used carts with spokeless solid wheels.
- ◆ There is evidence for extensive maritime trade with Mesopotamia. Indus Seals have been found as far as Mesopotamia (Sumer) which are modern-day Iraq, Kuwait and parts of Syria.
- ◆ King Naram-Sin of Akkadian Empire (Sumerian) has written about buying jewellery from the land of Melukha (a region of the Indus Valley).
- ◆ Cylindrical seals similar to those found in Persian Gulf and Mesopotamia have also been found in the Indus area. This shows the trade links between these two areas.
- ◆ A naval dockyard has been discovered in Lothal in Gujarat. It shows the maritime activities of the Indus people.

Dockyard at Lothal

Lothal is situated on the banks of a tributary of Sabarmati river in Gujarat.

Leader in Mohenjo-Daro

- ◆ A sculpture of a seated male has been unearthed in a building, with a head band on the forehead and a smaller ornament on the right upper arm.
- ◆ His hair is carefully combed, and beard finely trimmed.
- ◆ Two holes beneath the ears suggest that the head ornament might have been attached till the ear.
- ◆ The left shoulder is covered with a shawl-like garment decorated with designs of flowers and rings.
- ◆ This shawl pattern is used by people even today in those areas.

- KVT Complex (Korkai-Vanji-Thondi) spread over Afghanistan and Pakistan has many places, names of those were mentioned in Sangam literature.
- Korkai, Vanji, Tondi, Matrai, Urai and Kudalgarh are the names of places in Pakistan.
- Gurkay and Pumpuhar in Afghanistan are related to the cities and ports mentioned in the Sangam Age. The names of the rivers Kawri and Poruns in Afghanistan and the rivers Kaveri Wala and Phornai in Pakistan also occur in the Sangam literature.

Technology

- ◆ Indus people had developed a system of standardised weights and measures.
- ◆ Ivory scale found in Lothal in Gujarat is 1704mm (the smallest division ever recorded on a scale of other contemporary civilisations).

The word 'civilisation' comes from the ancient Latin word *civis*, which means 'city'.

The hidden treasures of the Indus Civilisation

Inscriptions (written in a script of those times) can provide us information about customs, practices and other aspects of any place or time. So far, the Indus script has not been deciphered.

Apparel

- ◆ Cotton fabrics were in common use.
- ◆ Clay spindles unearthed suggest that yarn was spun.
- ◆ Wool was also used.
- ◆ Settlements were built on giant platforms and elevated grounds.
- ◆ The Indus Civilisation seems to have been a peaceful one. Few weapons were found and there is no evidence of an army.
- ◆ They displayed their status with garments and precious jewellery.
- ◆ They had an advanced civic sense.

- Iron was unknown to people of Indus.
- Indus people used the red quartz stone called Carnelian to design jewellery.
- Copper was the first metal discovered and used by humans.

Ornaments

- ◆ Ornaments were popular among men and women.
- ◆ They adorned themselves with necklaces, armlets, bangles, finger rings, ear studs and anklets.
- ◆ The ornaments were made of gold, silver, ivory, shell, copper, terracotta and precious stones.

Governance

- ◆ Historians believe that there existed a central authority that controlled planning of towns and overseas trade, maintenance of drainage and peace in the city.

Archaeological site at Mohenjo-Daro has been declared as a World Heritage Site by UNESCO.

GEOGRAPHY

- THE UNIVERSE AND SOLAR SYSTEM
- INDIA - PHYSICAL FEATURES
- CLIMATE AND NATURAL VEGETATION OF INDIA
- INDIA - AGRICULTURE PATTERN
- NATURAL RESOURCES
- INDUSTRIES
- TRANSPORT AND COMMUNICATION
- POPULATION DENSITY AND DISTRIBUTION
- BIOSPHERE
- BIODIVERSITY OF TAMIL NADU
- DISASTER MANAGEMENT
- CLIMATE CHANGE
- ENVIRONMENTAL ISSUES
- GEOGRAPHICAL LANDMARKS

MODEL TESTS

THE UNIVERSE AND SOLAR SYSTEM

Introduction

- Numerous stars and celestial bodies came into existence by a massive explosion called Big Bang. These celestial bodies together are called the Universe. It is also referred to as the Cosmos. The stars that we see are so far away and appear to be small, but they are really huge in size.

The study of the Universe is called Cosmology. The term **Cosmos** is derived from the Greek word 'Kosmos'.

Universe

- The Universe is a vast expanse of space. Most astronomers believe that the Universe came into existence after the Big Bang explosion that took place about 15 billion years ago. The universe consists of billions of galaxies, stars, planets, comets, asteroids, meteoroids and natural satellites. These are collectively called as celestial bodies, which are located far away from each other. **A Light year is the unit used to measure the distance between the celestial bodies.**

A light-year is the distance traversed by light in a year at a velocity of 300,000 km per second. Sound travels at a speed of 330 m per second.

Theories about Earth's origin

- One of the earliest theories about earth's origin was put forward by **Immanuel Kant** and it was known as **Nebular hypothesis**. His theory stated that planets were formed out of cloud materials associated with youthful Sun, which was slowly rotating.
- Mathematician Laplace** revised the Nebular hypothesis in 1796 and stated that planets had condensed from primitive solar atmosphere, which originally extended far beyond the limits of the present day system. As this cloud gradually contracted under the effects of gravity, it first formed the rings and then amalgamated into planets.
- Afterwards, **Lyttleton** propounded the accretion theory of the earth's formation. According to this theory, approximately 4.6 billion years ago, the solar system was a cloud of dust and gas known as a solar **nebula**.
- As the solar nebula began to spin, due to gravity the materials collapsed on itself and it formed the sun as the centre of the solar system.

Formation of solar system

When the Sun formed, the remaining material began to clump up. Small particles drew together bound by the force of gravity into larger particles.

The solar wind swept away lighter elements. Such as hydrogen and helium from the closer regions. It left only heavy rocky materials to create planets like earth. In this way, planets, moons, asteroids, comets, etc were created.

- The brightest star in our night sky is **Sirius**.
- 1.3 million Earths fit inside the Sun.

Modern theories about the origin of universe

- The most popular theory regarding the origin of universe is the **Big Bang theory** and it is also called as **expanding universe hypothesis**.
- In 1927, **Abbe Georges Lemaitre**, a Belgian astronomer was the first to propose, a theory on the origin of universe.
- Afterwards, **Edwin Hubble** propounded the Big Bang theory. According to his theory, the universe was formed about 13.75 billion years ago like a rapidly expanding balloon swelled from the size smaller than an electron to nearly its current size within a fraction of second.
- Matter from the universe was thrown out with great force in all directions and started expanding outwards. From the matter, many groups of stars were formed which is known as "Galaxies".

Voyager 2 travelling at the speed of more than 62,764.416 km/h will take more than 2,96,000 years to pass Sirius – the brightest star on our sky.

Galaxy

A galaxy is a system of billion of stars, stellar remnants, interstellar gas, dust and dark matter. The word galaxy was derived from the Greek word Galaxias (literally milky). The milky way is the galaxy that contains our solar system.

Three major forms of Galaxy :

- Spiral galaxy
- Elliptical galaxy
- Irregular galaxy

Spiral galaxies	It consists of a flat and rotating disk of stars, gases and dust. It has a central concentration of stars, known as "Bulge". Ex : The milky way and Andromeda.
Elliptical galaxies	It contains older stars with fewer gases. Ex : Messier89
Irregular galaxies	They are youthful galaxies with more dust and gases. This can make them very bright. Ex : Large Magellanic Cloud.

- According to Astronomers, The stars, planets and galaxies can make up only 4 percent of the universe. The remaining 96% substance of the universe cannot be seen.
- The age of the universe and the strength of the dark energy was measured by a technique called **gravitational lensing**.
- Scientists used this method to measure the distances that light travelled from a bright, active galaxy to the earth and some details of its expansion.

Star

- A star is a type of astronomical object which has its own light and heat.
- It is formed when enough dust and gas clump together because of the gravitational forces. It changes its forms during its lifetime such as red giant, white dwarf, neutron star and black hole.
- The nearest star to the earth is Sun. Sirius star is brighter than Sun. "Proxima Centauri" is the closest star to the sun.

Saul Perlmutter, Brian Schmidt and Adam Riess won the Nobel prize for physics in 2011 for their discovery that the universe is just expanding and picking up speed.

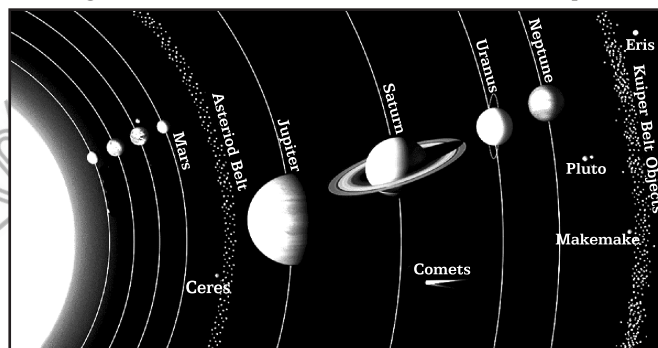
Constellation

- Constellation is a group of stars that forms a particular shape in the sky. Earlier, Ptolemy in his book Almagest, listed 48 constellations.
- In 1929, International astronomical union adopted official constellation boundaries that defined 88 official constellations, it exists even today.
- Ursa major** constellation is a major type of constellation that can be seen in northern hemisphere.
- Ursa major** means Great Bear in Latin.
- Ursa minor**, known as lesser bear or little bear is a constellation in the northern sky. Ursa minor is traditionally important for navigation because of 'Polaris' being the North Star.

The Solar system

- There are billions of solar systems in Milky Way galaxy. There can be a single star (or) multi star to every solar system. If it is multi starred, then it is called Binary Star systems.
- Our solar system consists of a star, eight planets, moons, asteroids, comets and meteoroids. The eight planets namely Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune revolve around the sun in an elliptical orbit.
- Our solar system is located in an outer spiral arm of the vast Milky way galaxy. It orbits the centre of the Milky way galaxy at about 828,000 km/h.
- It takes about 230 million years to complete one orbit around the galactic centre. It is believed to have been formed 4.6 billion years ago.

- There are more than 163 known satellites in our solar systems and many to be discovered yet. Amongst eight planets, Mercury and Venus are planets with no satellites, while Jupiter and Saturn have the highest number of satellites in our solar system.



Solar System

The distance between the Sun and the Earth is about 150 million kilometre. A flight flying at a speed of 800 km per hour from the Earth would take 21 years to reach the Sun.

Kuiper belt

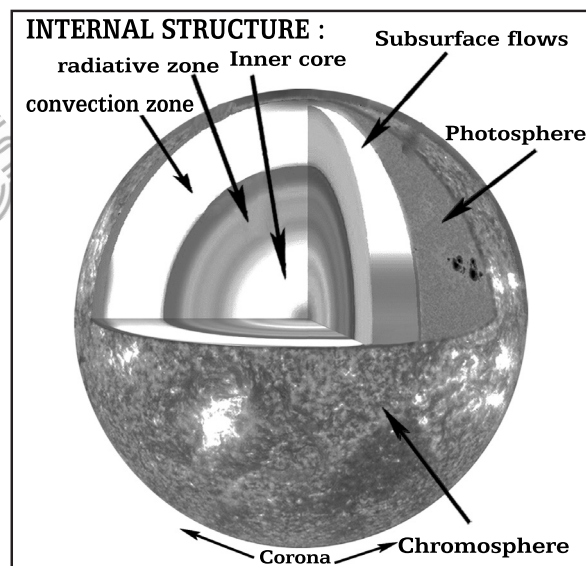
Our solar system also include Kuiper belt that lies past Neptune's orbit. These are sparsely occupied ring of icy bodies.

Oort Cloud

It is a giant spherical shell that surrounds our solar system. This cloud is made up of icy pieces of space debris. It orbits our Sun at the distance of 1.6 light years away. This shell of material is thick, extending from 5000 astronomical units to 1,00,000 astronomical units.

Our solar system is moving with an average velocity of 8,28,000 kilometres per hour. It takes about 230 million years to make one complete orbit around the milky way.

The Sun



Structure of the Sun

INDIAN POLITY

- | | |
|---|--|
| ▲ Constitution of India | ▲ Local Governments |
| ▲ Preamble | ▲ Elections and Representation |
| ▲ Salient Features of Indian Constitution | ▲ Political Parties and Political System |
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MODEL TESTS

CONSTITUTION OF INDIA

CONSTITUTIONAL DEVELOPMENT IN INDIA

India's constitutional development was a gradual transition from colonial control to democratic sovereignty. British statutes—from the Regulating Act (1773) to the Government of India Act (1935)—incrementally centralized administration, introduced legislative institutions, communal representation, provincial autonomy, and federal blueprints. Simultaneously, nationalist constitutionalism evolved through the Nehru Report (1928), Karachi Resolution (1931), and Cabinet Mission Plan, reflecting demands for rights, responsible government, and social justice. Constituent Assembly debates (1946–49), shaped by Ambedkar, Nehru, Patel, Alladi Krishnaswami Ayyar, and others, balanced liberty with unity, parliamentary democracy with federalism, and social revolution with institutional continuity. The Constitution borrowed globally yet remained rooted in Indian realities, making it both transformative and pragmatic.

- ✦ The constitution consists of a set of fundamental principles based on which the state organisation is governed. It is the supreme law of the land.
- ✦ The need for the constitution came along with the dawn of independence. For this purpose the Constituent Assembly was formed in 1946 and on January 26, 1950 the Constitution came into force.
- ✦ The idea of Constituent Assembly for India was put forward for the first time by M.N. Roy in 1934. M.N. Roy was a pioneer of Communist movement in India.

Prem Behari Narain Raizada was the calligrapher of the Indian Constitution. The original constitution was handwritten by him in a flowing italic style.

BACKGROUND:

The company rule (1773-1857)

There are certain Acts that had been formulated by the British Government to regulate and control the affairs of East India Company in British India. They formed the basis for our constitution.

Regulating Act of 1773

- ✦ It designated the Governor of Bengal as the Governor General of Bengal. The first Governor-General was Lord Warren Hastings.
- ✦ It established a Supreme Court in Calcutta (1774) which comprised a Chief Justice and three other judges.
- ✦ It laid the foundation for Central administration in India.

Amending act of 1781 : (Act of settlement)

- ✦ To rectify the defects of the Regulating Act of 1773, the British Parliament passed the Amending Act of 1781. It is also known as Act of Settlement.

Pitt's India Act of 1784

- ✦ It established a system of dual government.

- ✦ It established a new body called 'Board of control' to manage the political affairs of the company and the existing court of directors to manage the commercial affairs.

Charter Act of 1813

- ✦ The Company's entire commercial trade monopoly ended, except the tea trade and the trade with China.
- ✦ Allotted ₹ 1 lakh to promote education in India.

Charter Act of 1833

- ✦ The Charter Act of 1833 attempted to introduce a system of open competition for selection of civil servants, and stated that the Indians should not be debarred from holding any place, office and employment under the Company. However, this provision was negated after opposition from the Court of Directors.
- ✦ This act was final step towards centralisation.
- ✦ It made Governor-General of Bengal as the Governor General of India and vested in him all civil and military powers.
- ✦ Lord William Bentick was the first Governor-General of India.
- ✦ It ended the activities of East India company as a commercial body and changed it into a purely administrative body.
- ✦ A Law commission under Lord Macaulay was formed to codify the laws.

Charter Act of 1853

- ✦ It established a separate Governor-General's Legislative Council which came to be known as Indian Legislative Council.
- ✦ It introduced the local representation in the Indian Legislative Council.
- ✦ It introduced an open competition system of selection and recruitment of civil servants. The covenanted civil service was thus thrown open to the Indians also. Accordingly, the Macaulay Committee (the Committee on the Indian Civil Service) was appointed in 1854.

The Crown Rule (1858-1947)

The Revolt of 1857 brought about important changes in the British administration in India. The rule of the East India Company came to an end. The administration of India came under the direct control of the British Crown. These changes were announced in the Government of India Act of 1858. The 'Proclamation of Queen Victoria' assured the Indians a benevolent administration. Thereafter, important developments had taken place in constitutional history of India as a result of the Indian National Movement.

Government of India Act of 1858

The Government of India Act of 1858 was passed by the Parliament of England and received royal assent on 2nd August 1858. Following are the main provisions of the Act :

- ✦ East India Company's rule came to an end and the Indian administration came under the direct control of the Crown.
- ✦ In England, the Court of Directors and Board of Control were abolished. In their place the Secretary of State for India and India Council were established. The Secretary of State would be a member of the British cabinet. Sir Charles Wood was made the first Secretary of State for India. The Council consisting of 15 members would assist him.
- ✦ The Governor General of India was also made the Viceroy of India. The first Viceroy of India was Lord Canning.
- ✦ All the previous treaties were accepted and honoured by the Act.

Queen Victoria's Proclamation

On 1 November 1858 the Proclamation of Queen Victoria was unveiled by Lord Canning at Allahabad. This royal Proclamation was translated into Indian languages and publicly read in many important places. It announced the end of Company's rule in India and the Queen's assumption of the Government of India. It endorsed the treaty made by the Company with Indian princes and promised to respect their rights, dignity and honour. It assured the Indian people equal and impartial protection of law and freedom of religion and social practices. The Proclamation of Queen Victoria gave a practical shape to the Act of 1858.

Indian Councils Act of 1861

The Indian Councils Act of 1861 increased the number of members in the Governor-General's executive Council from 4 to 5. Further the Governor-General's Executive Council was enlarged into a Central Legislative Council. Six to twelve "additional members" were to be nominated by the Governor-General. Not less than half of these members were to be non-officials. Thus a provision was made for the inclusion of Indians in the Legislative Council. The functions of these members were strictly limited to making legislation and they were forbidden from interfering in the matters of the Executive Council. They did not possess powers of administration and finance.

Legislative Councils were also established in the provinces. The number of additional members in the provinces was fixed between four and eight. So, this Act was an important constitutional development and the people of India came to be involved in the law making process. The mechanism of Indian legislation developed slowly and was reinforced further by the Acts of 1892 and 1909.

Indian Councils Act of 1892

The Indian Councils Act of 1892 was the first achievement of the Indian National Congress. It had increased the number of "additional members" in the Central Legislative Council. They were to be not less than 10 and not more than 16. It had also increased the proportion of non-officials – 6 officials and 10 non-officials. The members were allowed to discuss the budget and criticize the financial policy of the government. In the provinces the number of additional members also was increased with additional powers.

Indian Councils Act of 1909

This Act is also known as Morley-Minto Reforms (Lord Morley was the then Secretary of State for India and Lord Minto was the then Viceroy of India).

The features of this Act were as follows:

- ✦ It considerably increased the size of the legislative councils, both Central and provincial. The number of members in the Central legislative council was raised from 16 to 60. The number of members in the provincial legislative councils was not uniform.
- ✦ It retained official majority in the Central legislative council, but allowed the provincial legislative councils to have nonofficial majority.
- ✦ It enlarged the deliberative functions of the legislative councils at both the levels. For example, members were allowed to ask supplementary questions, move resolutions on the budget and so on.
- ✦ It provided (for the first time) for the association of Indians with the executive councils of the Viceroy and Governors. Satyendra Prasad Sinha became the first Indian to join the Viceroy's executive council. He was appointed as the Law Member.
- ✦ It introduced a system of communal representation for Muslims by accepting the concept of 'separate electorate'. Under this, the Muslim members were to be elected only by Muslim voters. Thus, the Act 'legalised communalism' and Lord Minto came to be known as the Father of Communal Electorate.
- ✦ It also provided for the separate representation of presidency corporations, chambers of commerce, universities and zamindars.

Government of India Act of 1919

On August 20, 1917, the British Government declared, for the first time, that its objective was the gradual introduction of responsible Government in India.

The Government of India Act of 1919 was thus enacted, which came into force in 1921. This Act is also known as Montagu-Chelmsford Reforms (Montagu was the Secretary of State for India and Lord Chelmsford was the Viceroy of India).

The features of this Act were as follows:

- ✦ It relaxed the central control over the provinces by demarcating and separating the central and provincial subjects. The central and provincial legislatures were authorised to make laws on their respective list of subjects. However, the structure of government continued to be centralised and unitary.
- ✦ It further divided the provincial subjects into two parts—transferred and reserved. The transferred subjects were to be administered by the Governor with the aid of Ministers responsible to the legislative council. The reserved subjects, on the other hand, were to be administered by the Governor and his executive council without being responsible to the legislative council. This dual scheme of governance was known as 'dyarchy'—a term derived from the Greek word diarche which means double rule. However, this experiment was largely unsuccessful.

INDIAN ECONOMY AND DEVELOPMENT ADMINISTRATION IN TAMIL NADU

- **NATURE OF INDIAN ECONOMY**
- **FIVE-YEAR PLAN MODELS - AN ASSESSMENT**
- **PLANNING COMMISSION AND NITI AAYOG**
- **FISCAL POLICY**
- **BANKING**
- **MONETARY ECONOMICS**
- **FINANCE COMMISSION**
- **LAND REFORMS AND AGRICULTURE**
- **APPLICATION OF SCIENCE AND TECHNOLOGY IN AGRICULTURE**
- **INDUSTRIAL GROWTH**
- **RURAL DEVELOPMENT AND WELFARE**
- **RECENT SOCIAL WELFARE SCHEMES**
- **ADMINISTRATION OF STATES**
- **ROLE AND IMPACT OF SOCIAL WELFARE SCHEMES**
- **EVOLUTION OF 19TH AND 20TH CENTURY SOCIO-POLITICAL MOVEMENTS IN TAMIL NADU**
- **TAMIL NADU POLITICAL THOUGHT**
- **TAMIL RENAISSANCE**
- **ECONOMY OF TAMIL NADU**
- **EDUCATION AND HEALTH SYSTEMS IN TAMIL NADU**
- **GEOGRAPHY OF TAMIL NADU AND ITS IMPACT ON ECONOMIC GROWTH**
- **E-GOVERNANCE IN TAMIL NADU**
- **SOME IMPORTANT POLICIES AND PROGRAMMES OF TAMIL NADU**
- **SOME IMPORTANT STATE GOVERNMENT SCHEMES**

NATURE OF INDIAN ECONOMY

Nature of Indian Economy

Indian economy is the fourth largest economy in the world (nominal GDP). Being one of the top listed countries, in terms of industrialization and economic growth, India's national GDP has witnessed a growth rate of 7.6% in the 2025–2026 financial year. Nominal GDP is estimated to grow at 8.0% in FY 2025-26. Even though the rate of growth has been sustainable and comparatively stable, there are still signs of backwardness.

Features of a Developed Economy :

1. High National Income, 2. High Per Capita Income, 3. High Standard of Living, 4. Full Employment of Resources, 5. Dominance of Industrial Sector, 6. High Level of Technology, 7. High Industrialization, 8. High Consumption Level, 9. High Level of Urbanisation, 10. Smooth Economic Growth, 11. Social Equity, Gender Equality and Low Levels of Poverty, 12. Political Stability and Good Governance

Features of Indian Economy

India has a mixed economy	Indian economy is a typical example of mixed economy. This means both private and public sectors co-exist and function smoothly. On one side, some of the fundamental and heavy industrial units are being operated under the public sector, while, due to the liberalization of the economy, the private sector has gained importance. This makes it a perfect model for public – private partnership.
An emerging market	India has emerged as vibrant economy sustaining stable GDP growth rate even in the midst of global downtrend. This has attracted significant foreign capital through FDI and FII. India has a high potential for prospective growth. This also makes it an emerging market for the world.
Agriculture plays the key role	Agriculture being the maximum pursued occupation in India, it plays an important role in economy as well. Around 50% of the people in India depend upon agriculture for their livelihood. In fact, approx. 18% of our GDP today is contributed by the agricultural sector. Green revolution, ever green revolution and inventions in bio-technology have made India as a self sufficient and also surplus production country. The export of agricultural products such as fruits, vegetables, spices, vegetable oils, tobacco, animal skin, etc. also added to forex earning through international trading.
Emerging Economy	Emerging as a top economic giant among the world economy, India bags the fifth position in terms of nominal Gross Domestic Product (GDP) and third in terms of Purchasing Power Parity (PPP). As a result of rapid economic growth Indian economy has a place among the G20 countries.
Fast Growing Economy	India, the world's fourth-largest economy, has emerged as the fastest-growing major economy and is on track to become the world's third-largest economy with a projected GDP of \$7.3 trillion by 2030. India is projected to be world's fastest growing major economy (6.3% to 6.8% in 2025-26).
Fast growing Service Sector	The service sector, contributes a lion's share to the GDP of India. There has been a high rise growth in the technical sectors like Information Technology, BPO etc. These sectors have contributed immensely to the growth of the economy. These emerging service sectors have helped the country go global and helped in spreading its branches around the world.
Large Domestic Consumption	With the faster growth rate in the economy the standard of living has improved a lot. This in turn has resulted in rapid increase in domestic consumption in the country. The standard of living has considerably improved and life style has changed.
Rapid growth of Urban areas	Urbanization is a key ingredient of the growth of any economy. There has been a rapid growth of urban areas in India after independence. Improved connectivity in transport and communication, education and health have speeded up the pace of urbanization.
Stable macro economy	The Indian economy has been projected and considered as one of the most stable economies of the world. The 2014-15 Economic survey represents the Indian economy to be a "heaven of macroeconomic stability, resilience and optimism.
Demographic dividend	The human capital of India is young. This means that India is a pride owner of the maximum percentage of youth. The young population is not only motivated but skilled and trained enough to maximize the growth. Thus human capital plays a key role in maximizing the growth prospects in the country. Also, this has invited foreign investments to the country and outsourcing opportunities too.

Weakness of Indian Economy

Large Population	India stands second in terms of size of population next to China and our country is likely to overtake china in near future. Population growth rate of India is very high and this is always a hurdle to sustainable growth rate. The population growth rate in India is as high as 1.7 per thousand.
Inequality and poverty	There exists a huge economic disparity in the Indian economy. The proportion of income and assets owned by top 10% of Indians goes on increasing. This has led to an increase in the poverty level in the society and still a higher percentage of individuals are living Below Poverty Line (BPL). As a result of unequal distribution of income, the rich becomes richer and poor becomes poorer.
Increasing Prices of Essential Goods	Even though there has been a constant growth in the GDP and growth opportunities in the Indian economy, there have been steady increase in the price of essential goods. The continuous rise in prices erodes the purchasing power and adversely affects the poor people, whose income is not protected.
Weak Infrastructure	Even though there has been a gradual improvement in the infrastructural development in the past few decades, there is still a scarcity of the basic infrastructure like power, transport, storage etc.
Inadequate Employment generation	With growing youth population, there is a huge need of the employment opportunities. The growth in production is not accompanied by creation of job. Sometimes, the Indian economy is characterized by 'jobless growth'.
Outdated technology	The level of technology in agriculture and small scale industries is still outdated and obsolete.

Demographic trends in India

Scientific study of the characteristics of population is known as Demography. The various aspects of demographic trends in India are :

1. Size of population
2. Rate of growth
3. Birth and death rates
4. Density of population
5. Sex-ratio
6. Life-expectancy at birth
7. Literacy ratio

a. Size of Population

Census Year	Population (in crores)	Average annual growth rate
1901	23.84	—
1911	25.21	0.56
1921	25.13	– 0.03
1931	27.90	1.04
1941	31.87	1.33
1951	36.11	1.25
1961	43.92	1.96
1971	54.81	2.20
1981	68.33	2.22
1991	84.33	2.16
2001	102.70	1.97
2011	121.02	1.66

As per the United Nation database, India's current 1.41 billion population surpassed China in 2023. It is also expected to hit 1.5 billion by 2030 and 1.78 billion by 2050.

India has only about 2.4% of the world's geographical area and contributes less than 1.2% of the world's income, but accommodates about 17.5% of the world's population. In other words, every 6th person in the world is an Indian. Infact, the combined population of just two states namely, Uttarpradesh and Maharashtra is more than the population of United States of America, the third most populous country of the world. Some of the states in India have larger population than many countries in the world.

The negative growth during 1911-21 was due to rapid and frequent occurrence of epidemics like cholera, plague and influenza and also famines. The year 1921 is known as the '**Year of Great Divide**' for India's population as population starts increasing.

During 1951, population growth rate has come down from 1.33% to 1.25%. Hence it is known as '**Year of Small divide**'.

In 1961, population of India started increasing at the rate of 1.96% i.e, 2%. Hence 1961 is known as '**Year of Population Explosion**'. In the year 2001, the Population of India crossed one billion (100 crore) mark.

The 2011 census reveals growth of youth population which is described as 'demographic transition'.

b. Birth rate and death rate

Crude Birth rate : It refers to the number of births per thousand of population.

Crude Death rate : It refers to the number of deaths per thousand of population

Crude birth and death rates of India during various years

GENERAL SCIENCE

PHYSICS

- ❖ Nature of Universe
- ❖ Measurement of physical Quantities
- ❖ General Scientific Laws
- ❖ Everyday Application of the Science
- ❖ Nuclear Physics in our Daily Life

CHEMISTRY

- ❖ Elements and Compounds
- ❖ Acids, Bases and Salts
- ❖ Periodic Classification of Elements
- ❖ Carbon and its Compounds
- ❖ Chemistry in Everyday Life
- ❖ Food Adulteration
- ❖ Metallurgy

BIOLOGY

- ❖ Main Concepts of Life Science
- ❖ Classification of Living Organisms
- ❖ Evolution
- ❖ Genetics and Heredity
- ❖ Physiology
- ❖ Nutrition, Health and Human Diseases
- ❖ Environmental Science
- ❖ Latest Inventions in Science and Technology

MODEL TESTS

PHYSICS

NATURE OF UNIVERSE

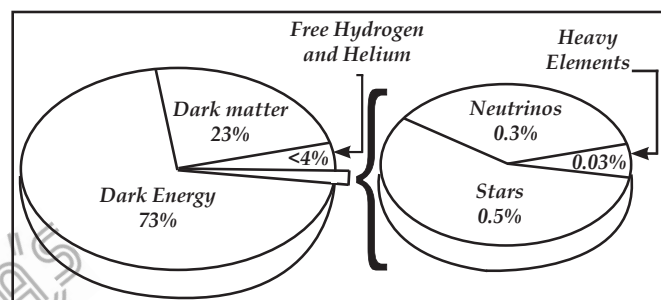
- ◆ In ancient days, it was believed that the earth was at the centre of the universe and the moon, the planets, the sun and stars were orbiting around it. This model was put forth by the Greek philosopher Plato and his disciple Aristotle in 6th century B.C. It was standardized by a Greco Roman mathematician Ptolemy in the 2nd Century A.D. In India a similar model can be seen in the Siddhantic astronomy in Aryabhata's Aryabhateeyam.
- ◆ In 16th century, a polish priest and astronomer named **Nicolaus Copernicus (1473-1543 AD)**, stated that the sun was at the centre of the solar system and the planets revolves around it. This theory is known as **heliocentric model (helios = sun)**. Even Copernicus hesitated to publish his work. His theory was however published in the year of his death in 1543 AD.
- ◆ Invention of the telescope in the Netherlands, in 1608 AD created a revolution in astronomy. In 1608, Galileo designed his own telescope, through this he observed moons of Jupiter, phases of Venus and rings of Saturn. He argued that all the planets orbits the sun and not the earth.

Building block of the Universe

- ◆ The universe contains everything that exists today including planets, stars, space and galaxies. This includes all matter, energy and even time. **Galaxies are collection of billions of stars**. It is beyond the bounds of possibility to know exact size of the universe. It could be infinitely large. However, scientists to some extent tried to measure the size of the universe by what they can actually see. This is called the '**observable universe**'. The observable universe is around 93 billion light years (1 light year is equal to the distance that light travels in one year, which is 9.4607×10^{12} km).
- ◆ It is interesting to know that the universe is just expanding. It is growing larger and larger all the time. In 1929, Edwin Hubble, an astronomer at California Institute of Technology, made a critical discovery that universe is expanding. Once scientists understood that the universe was expanding, they immediately realized that it would have been smaller in the past. At some point in past, the entire universe would have been a single point. This point, later exploded with unimaginable force called event of **big bang**, and it was the beginning of the universe as we understand it today. However, most of the universe what we think of is empty space. All the atoms together make up only around **4% of the universe**. The majority of the universe consists of something scientists call as **dark matter and dark energy**.

Difference between normal matter and dark matter

Normal matter	Dark matter
Normal matter or baryonic matter can be broken down into sub-atomic particles called leptons (for example electron) and quarks (the building blocks of protons and neutrons). These are what make up the atoms and molecules which are the components of everything from humans to stars.	In contrast with normal matter, dark matter is material that is non-luminous. That is, it does not interact electromagnetically and therefore it appears dark (i.e it will not reflect or give off light).
Normal matter is Luminous, that is, it interacts electro magnetically and gravitationally with other matter and with radiation. It doesn't necessarily shine like star. It may give off other radiation (such as infrared).	The exact nature of dark matter is not well known, although its effect on other masses (such as galaxies) has been noted by astronomers such as Dr. Vera Rubin and others. However, its presence can be detected by the gravitational effect it has on normal matter. For instance, its presence can constrain the motions of star in galaxy.



Cosmological Composition

Age of the Universe :

- ◆ Scientists believe that the universe came into being after a massive explosion called the **Big Bang**. According to Big Bang Theory ; In the beginning, all matter forming the universe existed in one place in the form of a "**tiny ball**" (**singular atom**) with an unimaginably small volume, infinite temperature and infinite density. After several years the "tiny ball" exploded violently. This led to huge expansion. It is now generally accepted that the event of big bang took place **13.82 billion years before the present**. We know that expansion continues even

to the present day. As it grew, some energy was converted into matter. There was particularly rapid expansion within fractions of a second after the bang. Thereafter, the expansion has slowed down. Within first three minutes from the Big Bang event, the first atom began to form.

- ◆ Within 300,000 years from the Big Bang, temperature dropped to 4,500K (Kelvin) and gave rise to atomic matter. The universe became transparent. The expansion of universe means increase in space between the galaxies. An alternative to this was **Hoyle's concept of steady state**. It considered the universe to be roughly the same at any point of time. However, with greater evidence becoming available about the expanding universe, scientific community at present favours argument of expanding universe.

Formation of Universe

Time/year	Event
0	Big Bang
10^{-32} seconds	Cosmic Inflation (origin of fluctuations)
1 second	Particles formation
100 seconds	Ordinary matter particles are coupled to light. And dark matter particles start building structures.
380000 years	Recombination (ordinary matter particles decouple from light and the cosmic microwave background is released)
From 380000 years to 200 million years	Dark ages (ordinary matter particles fall into the structures created by dark matter)
200 million years	First stars & galaxies
10 billion years	Galaxy evolution (Clusters of galaxies and super clusters formation)
13.82 billion years	Today

Galaxies

- ◆ In the beginning, all matter forming the universe existed in one place in the form of tiny ball. The distribution of matter and energy was not present in the early universe. These initial density differences gave rise to differences in gravitational forces and it caused the matter to get drawn together. These formed the bases for development of galaxies.
- ◆ A galaxy is a massive collection of gas, dust and billions of stars. Galaxies spread over vast distances that are measured in thousands of light-years. The diameters of individual galaxies range from 80,000 – 150,000 light years.
- ◆ **Scientists believe that there are one hundred billion (10^{11}) galaxies in the observable universe.**

Galaxies are also in different shapes. Depending on their appearance, galaxies are classified as spiral, elliptical or irregular. Galaxies may present alone or in pairs and also in parts of groups, clusters and super clusters. Galaxies in groups would interact and even merge together.

- ◆ Our solar system is a part of the "**Milky way galaxy**". In ancient times, it was imagined to be a river of light flowing in the sky. Thus, it was named **Akash Ganga**. There are several galaxies besides our milky way galaxy. **The Andromeda Galaxy**, also known as Messier 31, (M31) or NGC 224 is a spiral galaxy approximately 780 kiloparsecs from Earth and the nearest major galaxy to the milky way galaxy. Milky way galaxy is spiral in shape. Our solar system is 25,000 light years away from the centre of our galaxy.

A light year is a measure of distance and not of time. Light travels at a speed of 300,000 km/second. Considering this, the distance the light that travels in one year is taken to be one light year. This equals to 9.461×10^{12} km. The mean distance between the sun and the earth is 149,898,000 km. In terms of light years, it is 8.311 minutes.

Stars

- ◆ The formation of stars is believed to have taken place some 5-6 billion years ago. Stars are the most widely recognized astronomical objects and represent the most fundamental building blocks of galaxies.
- ◆ Stars are formed within the clouds of dust and scattered throughout in most galaxies. Stars produce heat, light, ultraviolet rays, x-rays and other forms of radiation. However, stars are responsible for the formation and distribution of heavy elements such as carbon, nitrogen and oxygen. Stars are largely composed of gas and plasma (a superheated state of matter) and are built by hydrogen gases. Over 3,000 stars can be seen in a dark night with the naked eye. It is impossible to predict the exact number of stars. It is generally believed our universe constitutes more than 100 billion galaxies and each of those galaxies may have more than 100 billion stars.
- ◆ Stars may appear to be alone, however most of the stars exist as pairs. The brightness of a star depends on their intensity and the distance from the Earth. Stars also appear to be in different colours depending on their temperature. Stars with higher temperature looks white or blue, whereas cooler stars looks orange or red in colour.

Constellations

- ◆ The stars forming a group that has a recognisable shape is called a constellation. They represent an animal, mythological personalities or creature, a god or an object. One of the most famous constellations which we can see during summer time in the early part of the night is **Ursa Major**. It is also known as the Big Dipper, the Great Bear or the Saptarshi.

- ◆ Ursa minor is sometimes informally called the little Dipper, because it looks like a smaller and fainter version of the Big Dipper (ursa major). Its brightest star, at the tip of the ladle's handle is polaris, the pole star. There are formally 88 constellations as accepted. Some of them are ; **Aries, Gemini, Leo, Orion, Scorpius and Cassiopeia.**

Polestar

- ◆ A pole star also known as polar star, preferably bright, closely aligned to the axis of rotation of an astronomical object. Currently, '**Polaris (ursae minoris)**' is designated as the north star or pole star. (It is the brightest star in the constellation of ursa minor). It is very close to the north celestial pole, making it the current northern pole star. Sailors and travellers have used it for navigational purposes for centuries because of its constant - seeming position in the sky.
- ◆ There is no such pole star for the southern celestial pole.

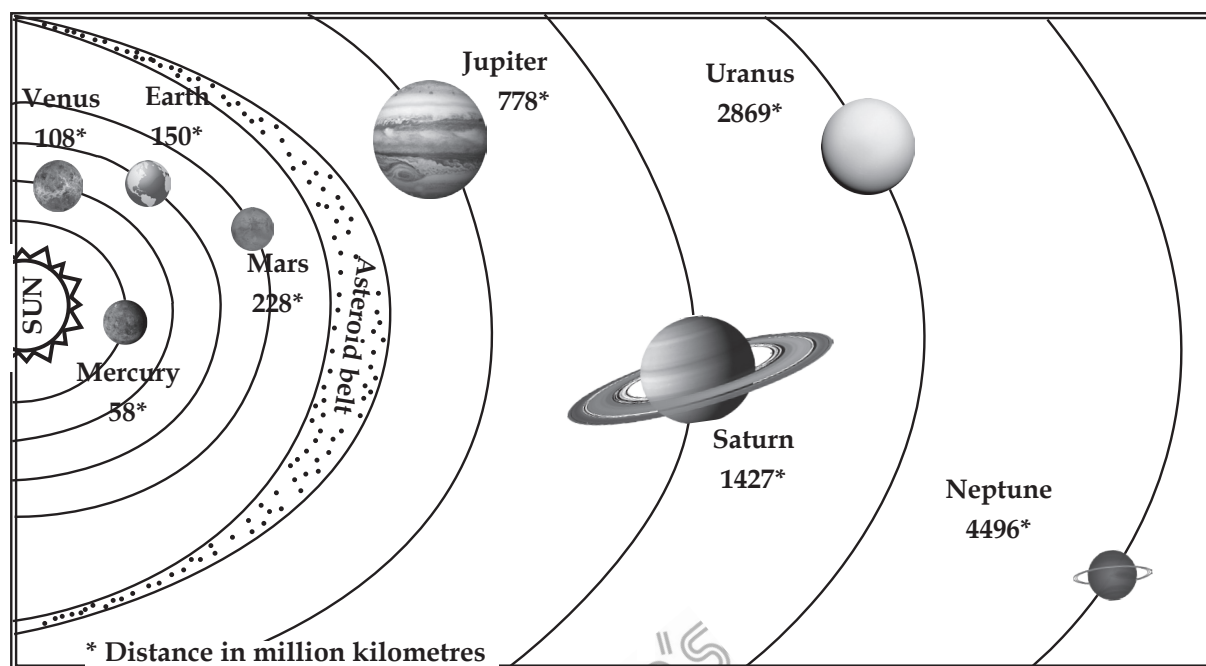
The solar system

The Sun and the celestial bodies which revolve around it form the solar system. It consists of many number of bodies such as planets, comets, asteroids and meteors. The gravitational attraction between the sun and these objects keeps them revolving around it.

Our solar system consists of eight planets. The nebula from which our solar system is supposed to have been formed, started its collapse and core formation started, some time (5-5.6 billion years) ago and planets were formed about 4.6 billion years ago.

The Sun

The Sun is a yellow dwarf star, a hot ball of glowing gases at the heart of our solar system. Its gravity holds the solar system together, keeping everything – from the biggest planets to the smallest particles of debris – in its orbit. The connection and interactions between the Sun and Earth drive the seasons, ocean currents, weather, climate, radiation belts and auroras. The sun accounts for 99.8% of the mass of the entire solar system.



The Solar System

Planets

Inner planets - very close to the sun. They are made up of rocks.	Outer Planets - Very-very far from the sun and are huge planets made up of gases and liquids.
Mercury : One orbit around sun - 88 days, One spin on axis - 58.65 days.	Jupiter : One orbit around sun - 11 years, 11 months (around 12 years). One spin on axis - 9.92 hours, number of moons - 79
Venus : One orbit around sun - 255 days, One spin on axis - 243 days	Saturn : One orbit around sun - 29 years, 5 months. One spin on axis - 10.23 hours, number of moons - 82.
Earth : One orbit around sun - 365 days. One spin on axis - 23.93 hours, Number of moons - 1	Uranus : One orbit around sun - 84 years. One spin around axis - 17 hours, number of moons - about 27.
Mars : One orbit around sun - 687 days, One spin on axis - 24.62 hours, number of moons - 02	Neptune : One orbit around sun - 164 years. One spin on axis 18 hours, number of moons - 14.